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Celotex Corporation

Remedial Investigation Summary and Focused Baseline Risk Assessment Report

Celotex Corporation
Wilmington, Illinois Facility

January 2002

Environmental Resources Management
3913 Riga Boulevard
Tampa, Florida 33619

ERM®

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1.0 INTRODUCTION

Celotex Corporation operated a building paper and roofing shingle manufacturing facility in Wilmington, Illinois for approximately 30 years. During operation of the manufacturing facility, two waste disposal areas (i.e., landfills) were utilized on a portion of the property. The facility is no longer in operation, and Celotex intends to close out the facility. Celotex retained Environmental Resources Management (ERM) to review site investigation information obtained during four previous site investigations conducted at the facility, and to prepare a baseline risk assessment using the available site information. This report provides the results of that effort.

1.1 PURPOSE OF REPORT

The purpose of this report is to:

- Compile information obtained from four previous site investigations at the Celotex Wilmington facility into one document.
- Provide the results of a baseline risk assessment to document the risks posed by the site.
- Based on the demonstration of acceptable risks posed by the site, provide U.S. EPA Region 5 with justification for no further action at the facility.

1.2 SITE BACKGROUND

Site Setting

The Celotex site is located in the northern portion of the City of Wilmington in Will County, at Kankakee River mile 45 in Sections 25 and 26 of Township 33 North, Range 2 East. The site location is shown in Figure 1-1. The site is bordered on the north by a wetland area and a residential area, with rural farmland further to the north. North of the farmland is the Des Plaines Conservation Area, which is public land owned by the state of Illinois Department of Natural Resources. North of the conservation area is the Joliet Army Ammunition Plant. Bordering the site to the east is a residential area. To the south the site is bordered by Forked Creek (a tributary of the Kankakee River); to the south of Forked Creek is an industrial property. The southern part of the site is bordered to the west by the City of Wilmington Wastewater Treatment Plant, and

the northern portion of the site is bordered to the west by the Kankakee River.

The Kankakee River is a source of drinking water for the City of Wilmington. However, the surface water intakes are upstream of the site and do not appear to be affected by the site. Approximately 4,500 people live within a one-mile radius of the site. The closest private well is located approximately 2,000 feet southeast of the site on the opposite side of the Kankakee River.

Celotex operated the solid waste disposal site on a 40-acre parcel of land on their property. The disposal area consisted of two landfills. The two landfills include a smaller landfill to the south (the "original" landfill) and a larger "recent" landfill to the north (Figure 1-2). The smaller landfill was the original area used for disposal of manufacturing waste by Celotex. Once the smaller landfill was filled to capacity, material was disposed at the "recent" landfill. The larger "recent" landfill is approximately 22 acres in size.

The site is prone to flooding, and wetland areas exist on site. Run-off from the landfills collects in wetland areas that drain into the Kankakee River.

Site History

Celotex operated a manufacturing facility on the south side of Forked Creek from 1955 to the mid-1980s. The primary products of this operation were roofing shingles and felt paper. Waste generated from the plant was disposed of on approximately 22 acres of the 40-acre waste disposal site. Wastes disposed of included asphalt roofing shingles, felt paper, wooden pallets, and sludge from a recycling mill. The sludge was a by-product of the recycling of rags, magazines, wood pulp, and paper. Celotex informed ERM that the landfill was periodically covered with clean fill during operation of the site, and the landfill was covered with clean fill upon discontinuation of site operations.

An enforcement case was taken in 1978 against Celotex that was resolved. Additional information regarding site history is provided in several site investigation reports prepared by the IEPA (e.g., IEPA, 1997).

Regulatory Status

The Celotex site was never regulated under RCRA (IEPA, 1997). The IEPA states in their Site Team Evaluation Prioritization Report (IEPA, 1997) that "given the nature of the operation, the years it produced roofing materials, and the federal and state environmental regulations which existed during this time, the site in all likelihood would not fall under the

jurisdiction of the Atomic Energy Act (AEA), the Toxic Substances Control Act (TSCA), the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), or the Uranium Mill Tailings Radiation Control Act (UNTRCA).".

The site was placed on the Comprehensive Environmental Response Compensation and Liability Inventory System (CERCLIS) in the early 1980s as a result of a precautionary filing by Celotex, as required by Section 103C of CERCLA.

Following their completion of the Site Inspection Prioritization in 1995, the IEPA informed Celotex, in a letter dated February 23, 1996, that upon review of the assessments conducted at the site by the State of Illinois (which are discussed below), "the Illinois Environmental Protection Agency feels that the site may pose certain environmental concerns that may need to be addressed." The letter informed Celotex that, if Celotex was interested in addressing these concerns outside the context of the CERCLA enforcement program, the concerns could be addressed under the state's voluntary "Site Remediation Program."

1.3 *CONCLUSION OF BASELINE RISK ASSESSMENT*

As discussed in detail in subsequent sections of this report, the results of the baseline risk assessment (i.e., the human health risk assessment and the ecological risk assessment) indicate that the site does not pose risks to human health or the environment that warrant further site remediation activities.

2.0 RESULTS OF PREVIOUS INVESTIGATIONS

Site investigations have been conducted at the site on four separate occasions. The IEPA has conducted three separate investigations (one in 1989, one in 1995, and one in 1996), and the U.S. EPA conducted the most recent site investigation in 2001. Results of these site investigation have been documented in the following reports:

- *CERCLA Site Screening Investigation Report*, prepared by IEPA, 1989 (provides results of site investigation activities conducted in 1989);
- *CERCLA Site Inspection Prioritization Report*, prepared by IEPA, 1995 (provides results of site investigation activities conducted in 1995);
- *CERCLA Site Team Evaluation Prioritization for Celotex Corporation Dump Site, Wilmington, Illinois;* prepared by IEPA, dated May 1997 (provides results of site investigation activities conducted in 1996); and
- *Site Assessment Report - Celotex Corporation Dump Site, Wilmington, Illinois;* prepared by U.S. EPA, dated June 24, 2001 (provides results of site investigation activities conducted in 2001).

Table 2-1 provides a summary of environmental samples collected during the four site investigations referenced above, including sample depths (where reported) and laboratory analyses performed. Figure 1-2 shows locations of samples collected during the four site investigations. The above-referenced reports describe sample collection methods, rationale for sample locations and protocols, quality control measures, etc. The following sections address each of the sampled media.

Ground Water

Ground water samples were collected during the 1989, 1996, and 2001 investigations. Table 2-2 provides a summary of ground water quality data presented in the above-referenced reports. Only those analytes reportedly detected in one or more ground water samples are listed in Table 2. U.S. EPA Maximum Contaminant Levels (MCLs) are listed in Table 2-2 for comparison. The IEPA has indicated that they consider ground water at the site to be Class II (General Resource Ground Water). Therefore, State of Illinois Class II Groundwater Quality Standards also are listed in Table 2-2 for comparison

As reported in the U.S. EPA's 2001 Site Assessment Report (U.S. EPA, 2001), the only contaminant of concern detected in the three ground water

samples collected during IEPA's 1989 Site Screening Investigation (SSI) was arsenic at 51 parts per billion (ppb) at one monitoring well, which "barely exceeded the Ecotox Threshold limit of 50 ppb." One ground water sample was collected by IEPA during their 1996 Site Team Evaluation Prioritization (STEP). The ground water sample contained no contaminants of concern (IEPA, 1997).

The 2001 U.S. EPA site assessment identified only two constituents - arsenic and lead - in ground water at concentrations exceeding MCLs. Analysis of the filtered sample from the well that contained lead at a concentration above the MCL did not contain detectable lead, suggesting that the lead detected in the unfiltered sample was not dissolved but was adsorbed to sediment particles.

Results of the three ground water sampling events conducted at the site indicate that arsenic is the only constituent of possible concern for ground water. However, the Illinois Class II Groundwater Quality Standard for arsenic is 200 ppb, and the highest arsenic concentration reported for the site was 142 ppb (Table 2-2). This suggests that arsenic is of little concern. Also, as indicated below, arsenic was not detected in surface water samples collected at the east bank of the Kankakee River, suggesting that discharge of arsenic-impacted ground water is not adversely affecting the river. Because the property between the landfill area and the river is floodplain and is not likely to be developed, there are no likely future exposure scenarios regarding arsenic-impacted ground water at the site.

Surface Water

Surface water samples were collected during the 1989 and 2001 investigations. Table 2-3 provides a summary of surface water quality data presented in the above-referenced reports. Only those analytes reportedly detected in one or more surface water samples are listed in Table 2-3. U.S. EPA Ambient Water Quality Criteria (AWQC) for fresh surface water are listed in Table 2-3 for comparison.

As reported in the U.S. EPA's 2001 Site Assessment Report (U.S. EPA, 2001), neither of the two surface water samples collected by IEPA during their 1989 SSI indicated the presence of any contaminants of concern. The U.S. EPA compared the results for the surface water samples collected in 2001 with U.S. EPA AWQC, and found three constituents (copper, iron, and lead) were present at concentrations exceeding these criteria.

It is important to note that samples SW-2 and SW-4 were the only surface water samples with copper concentrations above AWQC. These two surface water samples also contained the highest lead and iron concentrations reported (Table 2-3). Samples SW-2 and SW-4 were

collected from Forked Creek (Figure 1-2), which is upgradient of the site and may not be affected by the 22-acre landfill. Stated another way, the worst-case surface water samples may not be affected by the site, and use of the data from these samples for the baseline risk assessment represents an overly conservative approach.

Sediment

Sediment samples were collected during the 1995 and 2001 investigations. Table 2-4 provides a summary of sediment quality data presented in the above-referenced reports. Only those analytes reportedly detected in one or more sediment samples are listed in Table 2-4. It is ERM's understanding that there are no specific sediment criteria promulgated by the IEPA. Ontario Ministry of Environment (MOE) lowest effect levels (LELs) have been used previously by IEPA and U.S. EPA to evaluate sediment data for the site.

As reported in the U.S. EPA's 2001 Site Assessment Report (U.S. EPA, 2001), the only constituent detected at a concentration above an LEL in sediment samples collected by IEPA as part of their 1995 Site Inspection Prioritization (SIP) was copper, which "slightly exceeded" the LEL. Regarding sediment samples collected in 2001, the U.S. EPA reported that "Eight of the sediment samples had metal concentrations that exceeded LELs; most of these concentrations, however, only slightly exceeded the LELs." (U.S. EPA, 2001).

The 1995 sediment data for mercury indicate that mercury was not detected in any of the 10 sediment samples collected. However, mercury was reported (as "J" qualified estimates) in each of the nine sediment samples collected by the U.S. EPA in 2001. The 2001 data are qualified as estimates due either to quality control issues with an associated blank and/or to a poor match between a duplicate sample and the "original" sample (U.S. EPA, 2001). The duplicate sample (SED-6D) reportedly contained a mercury concentration of 0.44J, while the "original" sample (SED-6) reportedly contained a mercury concentration of 2.0J. Sample SED-6 contained the highest reported mercury concentration of all sediment samples collected (the second-highest reported concentration was 0.66J in sample SED-5). This poor correlation, and the overall lack of correlation between the 1995 sediment data for mercury and the 2001 sediment data for mercury, render the sediment mercury data suspect and of limited value.

Soil

Table 2-5 provides a summary of soil quality data. Soil samples were collected during the 1989 and 1996 investigations. As reported in the U.S.

EPA's 2001 Site Assessment Report (U.S. EPA, 2001), the soil samples collected by IEPA in 1989 were found to contain no volatile organic compounds, trace concentrations of semivolatile organic compounds, and PCBs. As stated in the U.S. EPA report, "IEPA determined that these compounds did not pose a risk to human health or the environment at the concentrations detected (IEPA, 1989)." Regarding the results for soil samples collected by IEPA in 1996, the U.S. EPA summarized the findings by stating that "One soil sample contained lead at 79.2 ppm, cyanide at 17.9 ppm, dieldrin at 10 ppb, and PCBs at 3.4 ppm." (U.S. EPA, 2001).

Waste Material Sampling

As part of the investigation in 2001, the U.S. EPA collected a sample of "gray waste material located in a surface depression on the site property." (U.S. EPA, 2001). The sample was analyzed for metals, cyanide, dioxins, and furans. Sample results were compared to U.S. EPA Region 9 Preliminary Remediation Goals (PRGs). PRGs were not exceeded for any of the parameters tested (U.S. EPA, 2001).

3.0 *HUMAN HEALTH RISK ASSESSMENT*

The development of the Human Health Risk Assessment (HHRA) for ground water, surface water, soil, and sediment at the site was conducted in accordance with applicable Region 5 U.S. EPA risk assessment guidance procedures and policies for the performance of risk assessment at hazardous waste sites. The HHRA addresses the following:

- Hazard Identification – Constituents selected for investigation were based on a comparison of reported constituent concentrations to appropriate screening levels, such as: Maximum Contaminant Levels (MCLs), Ambient Water Quality Criteria (AWQC), Illinois Class II Groundwater Quality Standards, and U.S. EPA Region 9 Preliminary Remedial Goals (PRGs). Those constituents exceeding screening levels were retained for further evaluation.

- Exposure Assessment – In the exposure assessment, conditions were defined under which a person may contact site-related constituents, considering current and future land-use scenarios.

- Toxicity or Dose-Response Assessment – Current toxicity data were compiled for each Constituent of Potential Interest (COPI), as defined in the Hazard Identification.

- Risk Characterization -- In the risk characterization, information collected in the previous steps was combined to estimate contaminant exposure levels and assess whether contaminant concentrations pose risks that are of a magnitude to cause concern.

- Identification of Limitations/Uncertainties -- Critical assumptions and uncertainties in the report are identified.

Primary U.S. EPA guidance documents used to develop the HHRA included the following: *Risk-Based Concentration Tables* and Background Documents (U.S. EPA Region 9, January, 2001); *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual/Part A* (1989a); *Risk Assessment Guidance for Superfund/Part B* (1992a); and *Supplemental Guidance to RAGS: Region IV Bulletins* (1996).

3.1 *METHODOLOGY*

Each step of the HHRA for the Site is discussed in detail in the following sections.

Hazard Identification

During this step, the identification of COPIs was performed using U.S. EPA Region 4 Bulletin, "*Data Collection and Evaluation*" (U.S. EPA Region 4, 1996). In the first step, a screening analysis was performed, in which maximum constituent concentrations were compared to appropriate screening levels for each media, such as published MCLs and PRGs developed by U.S. EPA Region 9 (U.S. EPA Region 9, November 2000).

The results of the screening are presented in Tables 3-1 thru 3-4 (Risk Assessment Guidance for Superfund (RAGS) Table 3). The screening indicated that arsenic and iron exceeded the screening value in both ground water and soil. For surface water, aluminum, copper, iron, and lead exceeded the screening value. For sediment, nine metals, including arsenic and iron, exceeded the screening values.

Exposure Assessment

The exposure assessment evaluates the likelihood, magnitude, and frequency of exposure to the COPIs, and identifies pathways and routes by which human receptors may come into contact with these constituents. The specific steps involved in the exposure assessment include the following:

Characterization of Exposure Setting
- Description of the physical setting
- Identification of potentially exposed populations

Identification of Exposure Pathway
- Identification of media of concern
- Identification of actual and potential exposure route

Development of Exposure Scenarios
- Selection of present and foreseeable future exposure scenarios
- Establishment of exposure parameters

The physical characteristics of the Celotex site were examined to identify pathways by which human receptors may be exposed to constituents at the site. Exposure scenarios were developed based on demographics, land use, and general human behavior patterns. Potential exposure pathways identified for consideration are summarized in Table 3-5 (RAGS Table 1).

Exposure dose estimates were then calculated for each actual and potential exposure pathway and receptor population, considering

primarily current site use and its environs. The exposure pathways were evaluated for both adult and child receptors.

For ground water, no complete exposure pathways were identified. Ground water at the site has been defined by IEPA as Illinois Class II, General Resource Groundwater, which is defined as not potable (Class I) and not special resource (Class III). The ground water will not be ingested and the only outlet for the ground water is into the Kankakee River (surface water). Because the property between the landfill area and the river is floodplain and is not likely to be developed, there are no likely future exposure scenarios regarding ground water. Therefore, further evaluation of risk associated with ground water was discontinued.

For surface water the exposure pathways evaluated included:

- Recreational contact while wading (ingestion and dermal contact)

For soil the exposure pathways evaluated included:

- Incidental ingestion and dermal contact while on-site
- Airborne particulates (inhalation) both on-site and off-site

For sediment the exposure pathways evaluated included:

- Recreational contact while wading (ingestion and dermal contact)

The values of intake variables (e.g., consumption rates) were selected so that the combination of all values used to compute exposure doses resulted in conservative but reasonable estimates. Since compounding maximum values for all variables would result in unrealistically high exposure estimates, maximum values were not selected for all intake variables. Tables 3-6 thru 3-17 (RAGS Table 4) present the numerical values used in the calculation of potential risk and the source of the numerical values for each exposure factor. In the event a numerical value could not be located in the literature, professional judgment was used to derive a value.

Toxicity Dose Response Assessment

Toxicity criteria derived from dose-response data are used to estimate the carcinogenic and non-carcinogenic risks associated with exposure to the COPIs. Toxicity criteria used in the development of the HHRA were obtained from U.S. EPA's Integrated Risk Information System (IRIS) on-line database, other appropriate U.S. EPA guidance documents and the scientific literature. Toxicity criteria, as indicated in U.S. EPA Region 9

PRG (November 2000) were obtained from the following sources, listed in descending order of use:

- IRIS,
- Health Effects Assessment Summary Tables (HEAST), and
- U.S. EPA's National Center for Environmental Assessment (NCEA)

Dermal reference doses and slope factors were derived from the oral references doses (RfD_o) and slope factors (CSF_o) for the same compound by adjusting for the oral adsorption factor.

Physical/chemical constants for the various chemicals assessed were obtained from the U.S. EPA Region 9 PRG database unless otherwise indicated.

3.2 *RISK CHARACTERIZATION*

The goal of the risk characterization is to assess whether the predicted chemical intake will pose an unacceptable risk of people developing cancer or experiencing an adverse acute, subchronic, or chronic non-carcinogenic effect as a result of exposure to site constituents.

The process used to calculate potential carcinogenic and non-carcinogenic risk integrates data developed from the exposure assessment, and toxicity and dose-response assessment. For the Celotex site, the cancer risk level was assumed to be 1E-5 lifetime increased cancer risk. This level is within the 1E-4 to 1E-6 range of acceptable cancer risk levels employed by EPA for risk assessment in its Superfund program. The HI for non-cancer risk was assumed to be 1.0.

The affect of a specific chemical is a function of constituent toxicity, and route and duration of exposure. U.S. EPA's cancer slope factors and RfDs were used as indicators of toxicity in the calculation of potential carcinogenic risks and hazard indexes.

Carcinogenic Risk

For carcinogens, the risk associated with exposure to constituents detected at the site was calculated for each exposure pathway and chemical according to the following equation:

$$risk\ (unitless) = CSF\ (mg/kg/day)^{-1} \times Intake\ (mg/kg/day)$$

where:

CSF = Cancer Slope Factor

Intake = Route-specific Intake (ingestion, inhalation or dermal)

The route-specific equations and default values are presented in Tables 3-6 thru 3-17 (RAGS Table 4) for all media. Tables 3-20 and 3-21 (RAGS Table 6) provide the cancer slope factors. Tables 3-22 thru 3-31 (RAGS Table 8) presents the predicted intake and the calculated risk for each constituent. By combining the risks for each compound, a combined risk was developed for each exposure pathway. The combined risk was then compared with the selected target risk (i.e., Cancer Risk=1E-5, which is within the 1E-4 to 1E-6 range of acceptable cancer risk levels employed by EPA for risk assessment in its Superfund program).

A combined risk that exceeds the target risk suggests an unacceptable risk of developing some form of cancer. However, the uncertainty factors built into the protective intake result in conservative intake values. Therefore, the predicted risk is likely well below the level at which adverse effects will be seen.

Non-carcinogenic Effects

For non-carcinogens, the hazard associated with exposure to constituents detected at the site was calculated for each exposure pathway and chemical according to the following equation:

Hazard quotient (unitless)= Intake Factor (mg/kg/day) / RfD (mg/kg/day)

where:

Intake = Route-specific Intake (ingestion, inhalation, dermal)
RfD = Reference Dose

The route-specific equations and default values are presented in Tables 3-6 thru 3-17 (RAGS Table 4) for all media. Tables 3-32 and 3-33 (RAGS Table 5) provides the reference doses. Tables 3-34 thru 3-45 (RAGS Table 7) present the predicted intake and the calculated hazard quotient (HQ) for each constituent. By combining the HQs for each compound, a combined hazard index (HI) was developed for each exposure pathway. The HI was then compared with the appropriate target hazard (i.e., Hazard Index=1).

A HI that exceeds unity (one) suggests a greater likelihood of developing an adverse subchronic or chronic toxic effect. However, the uncertainty factors built into the protective dose result in conservative reference dose

values. Therefore, the reference dose is likely well below the level at which adverse effects will be seen.

3.3 *LIMITATIONS AND UNCERTAINTIES*

ERM reviewed existing site data and concluded that sufficient site data existed from previous investigations to proceed with the HHRA. The following assumptions, based on discussions with Celotex personnel and U.S. EPA, were made prior to beginning the risk assessment process and influenced the scope of the risk assessment:

- Constituent concentrations reported in various environmental media that were used to complete the HHRA were those reported in the four previous site investigations discussed in Section 2.0 of this report.
- Potential pathways and receptors were reviewed based on the information provided by previous site investigations. Only complete pathways were evaluated in the risk assessment.
- EPA default values for exposure factors were used.
- Only reasonable maximum exposure (RME) was evaluated. Central tendency (CT) was not evaluated.
- Background concentrations were not considered in the screening process. Constituent concentrations were compared to health-based levels only.
- ARARs were assigned using the Illinois Class II Groundwater Quality Standards.
- Based on preliminary screening, semivolatile organic compounds (SVOCs), PCBs, and pesticides were not included in the risk assessment.

3.4 *SUMMARY AND CONCLUSIONS*

COPIs identified in ground water, surface water, soil, and sediment included a combination of metals. Calculated risks and hazards were all below applicable thresholds (a total HI greater than 1 and a cumulative excess lifetime cancer risk of $1x10^{-4}$) for all exposure scenarios evaluated. Based on these results, the site does not pose risks to human health that warrant further site remediation activities.

A summary of the calculated risks and hazards by exposure scenario is provided in Tables 3-46 thru 3-53 (RAGS Table 9). The hazards and risks presented in this risk assessment are not absolute estimates of risk that would result from direct or indirect exposure at the site. Consideration should be given to the uncertainties outlined in the previous section when making decisions about potential remedial actions at the site. The use of

default exposure assumptions is likely to overestimate hazards and risks from chemical exposures.

4.0 ECOLOGICAL RISK ASSESSMENT

An ecological risk assessment (ERA) is a qualitative and/or quantitative evaluation of the actual or potential effects of a site on plant and animal communities. The United States Environmental Protection Agency Region 5 (U.S. EPA) recommends a three-tiered approach to conducting an ERA. These three tiers require successively more detailed and quantitative data collection, analysis, and evaluation to determine the degree of ecological risk. The three tiers are:

- screening level assessment (Tier I),
- semi-quantitative ecological risk assessment (Tier II), and
- quantitative ecological risk assessment (Tier III).

A combination Tier I/Tier II ERA was conducted for the Celotex site. Environmental Effects Quotients (EEQ) were calculated for constituents of potential interest (COPIs) based on U.S. EPA screening levels for ecological receptors. These screening levels were developed by the U.S. EPA from the lowest value identified as being protective of the most sensitive organism, and usually for the most available form of a chemical. Thus, the screening levels are considered to be very conservative. In addition, semi-quantitative information regarding COPI toxicity and fate, and general habitat/ecosystem data were analyzed to assess whether the potential for ecological risk due to site-related stressors exists at such a degree as to warrant further investigation. The overall objectives of the ERA were to:

- provide Celotex with a screening assessment of ecological risk;
- identify site-related stressors, defined as any physical, chemical or biological factors that may induce an adverse ecological effect; and
- evaluate the likelihood that adverse ecological effects are occurring or may occur as a result of exposure to one or more stressors.

This ERA incorporated information collected during a preliminary "species of special concern" assessment (commonly referred to as threatened and endangered species assessment), a wetlands determination, a habitat/stressor characterization from the available literature, and site investigation sampling events (soil, ground water, surface water, and sediment sampling). The following sections describe the methodology utilized in this assessment and the results of the assessment.

Field Data Collection

As discussed in Section 2.0, field sampling activities were conducted at the site by the IEPA in 1989, 1995, and 1996, and sampling activities were conducted by the U.S. EPA in 2001. The 2001 data collected by the U.S. EPA were the most recent and were used in this ERA to represent current conditions. Sediment data from 1995 also were used. Soil data from 1996 were utilized in the evaluation due to the lack of more recent data. Ground water data were not used to extrapolate potential surface water or sediment concentrations, as data were readily available for these media. Grab samples of surface water and sediment collected during the site investigation comprise the database for the ERA. Surface water and sediment samples were collected from locations in Forked Creek and the Kankakee River. In addition, surface water and sediment samples were collected from a wetland area on-site to evaluate potential surface runoff impacts on aquatic receptors. These data were collectively used to evaluate potential ecological risk due to site-related constituents.

ERA Methodology

This ERA was conducted in a manner that is consistent with U.S. EPA's primary guidance: *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (U.S. EPA, 1997) and the U.S. EPA model RI/FS Scope of Work. These guidelines are based on U.S. EPA's conceptual manual entitled, *Framework for Ecological Risk Assessment* (U.S. EPA, 1992) and U.S. EPA's *Draft Guidelines for Ecological Risk Assessment* (U.S. EPA, 1996). Screening levels for surface water were the Ecotox Thresholds listed in U.S. EPA's 1996 ECO Update (Intermittent Bulletin Vol. 3, Number 2) or, for constituents that do not have Ecotox Thresholds (ETs) listed, U.S. EPA Ambient Water Quality Criteria were used. Screening levels for sediment were the ETs listed in U.S. EPA's 1996 ECO Update or, for constituents that do not have ETs listed, Ontario Ministry of Environment (MOE) lowest effect levels (LELs), were used.

U.S. EPA's ecological risk assessment guidance recommends a phased approach to the ERA, consisting of:

- Hazard Identification,
- Dose-response assessment,
- Conceptual Exposure/Pathway Analysis,
- Characterization of Site and Potential Receptors,
- Select Chemical, Indicator Species, and End Points,
- Exposure Assessment,
- Toxicity Assessment/Ecological Effects Assessment,
- Risk Characterization,

- Identification of Limitations and Uncertainties, and
- Site Conceptual Model.

Each of these steps and the results of the ERA are further discussed in the following sections.

4.1 *HAZARD IDENTIFICATION*

Tables 2-3 and 2-4 (Section 2) identify the constituents detected in surface water and sediment at the site, respectively. The detected constituents consist primarily of metals, with a general absence of detected organic compounds at elevated concentrations. Due to the general absence of organic compounds at elevated concentrations, these compounds are not considered to pose a risk, and were not evaluated further in this ERA. The fact that the U.S. EPA's site investigation activities in 2001 did not include organics (with the exception of dioxins and furans) on any of their sample analyte lists further corroborates the contention that organic constituents are not of concern at the site.

Surface water samples were collected during the 1989 and 2001 investigations. Table 4-1 lists the inorganic constituents detected in surface water during the U.S. EPA's 2001 site investigation (the most recent site data). Surface water screening values (SWSVs) are listed in Table 4-1 for comparison to reported concentrations. The U.S. EPA surface water sampling conducted in February 2001 provided reasonably good site coverage. Six constituents (barium, cobalt, copper, iron, manganese, and lead) were detected at concentrations exceeding SWSVs (Table 4-1). The surface water exposure pathway is addressed in this ERA for cobalt, copper, iron, and lead, but not for barium and manganese, as explained below.

Barium and manganese are considered to be a naturally occurring chemicals. This is based on the barium and manganese background concentrations of 110 and 636 mg/kg, respectively, for counties within metropolitan statistical areas, as established under 35 IAC 742. Comparison of barium and manganese concentrations in soil samples from the site (Table 2-5) shows that only two samples contained barium concentration above the 110 mg/kg background value, and only two samples contained manganese concentration above the 636 mg/kg background value.

Based on the above discussion, the presence of barium and manganese in surface water is not considered to be associated with site activities. Thus barium and manganese are not considered to be COPIs in this ERA.

Sediment samples were collected during the 1995 and 2001 investigations. Table 4-2 lists the inorganic constituents detected in sediment during the 1995 and 2001 site investigations. Sediment screening values (SSVs) are listed in Table 4-2 for comparison to reported concentrations. The U.S. EPA sediment sampling conducted in February 2001 provided reasonably good site coverage. Six constituents (arsenic, copper, iron, lead, manganese, mercury, and nickel) were detected at concentrations exceeding SSVs. As discussed above, the presence of manganese is not considered to be associated with site activities, based on naturally occurring background levels in soil. Consequently, manganese is not considered to be a COPI in sediment. The sediment exposure pathway is addressed for arsenic, copper, iron, lead, mercury, and nickel) in this ERA.

4.1.1 *Dose-Response Assessment*

The metals assessed in this ERA are those that exceed SWSVs or SSVs, with the exception of barium and manganese in surface water, as described above. In certain concentrations, these metals have been documented as toxic to aquatic life. The toxicity of most the metals of interest is dependent upon water hardness. Typically, as hardness increases the available metal is chelated or buffered and is therefore less toxic because it is less available. SWSVs for most metals in surface water were based on an assumed hardness of 100 mg/l as calcium carbonate (Table 4-1).

The transport of most metals in the aquatic environment is influenced by the speciation of the metal ion. The available information indicates that fish bioaccumulate very little lead and other metals (other than mercury) in edible tissues; however, oysters and mussels may accumulate metals at higher levels (ASTDR, 1993). Lead and mercury can be methylated by microorganisms present in sediments. The volatile compound resulting from biomethylation of lead (i.e., tetramethyl lead), and the volatile compound resulting from biomethylation of mercury (i.e., methyl-mercury) probably leave the sediments and are either oxidized in the water column or enter the atmosphere (ASTDR, 1993a). Thus, lead and mercury may enter the aquatic environment from contaminated sediments. However, as discussed above, mercury was not detected in surface water at a concentration exceeding its SWSV.

Under anaerobic conditions, metals generally form a sulfide that acts as the controlling species for the distribution of that metal. The sulfide form is insoluble and therefore immobile. Metals have been shown to bioconcentrate in aquatic organisms but do not appear to biomagnify (accumulate in greater amount as higher species feed on lower species) in the food chain. The sediments of the wetland area, backwater area of Forked Creek, and deep water of the Kankakee River are likely to

experience anaerobic conditions, and sulfides in these sediments may render the metals less available.

Arsenic appears to behave differently than most metals as there are four forms of arsenic that exist in the natural environment. The relative toxicities of these forms of arsenic are not well-documented in the literature. Therefore, dissolved arsenic, which is the most toxic form of arsenic, is the form of arsenic for which criteria are developed (ASTDR, 1993b). The arsenic SWSV is based on the conservative assumption that all arsenic is in the dissolved form, which is not the case. Consequently dissolved and total recoverable arsenic are useful parameters in determining water quality criteria.

4.1.2 *Conceptual Exposure/Pathway Analysis*

The potential exists for direct exposure of aquatic life to the four COPIs in surface water and the six COPIs in sediment. Due to the size of the Kankakee River, recreational fishing is common in the area. Fish populations are monitored by the Illinois Department of Natural Resources. The area of Forked Creek that was sampled by the U.S. EPA is at or near the confluence with the Kankakee River. The fishery of Forked Creek is assumed to be directly influenced by the Kankakee River and, therefore, these two water bodies are considered to have the same type of aquatic resources.

4.1.3 *Characterization Of Site And Potential Receptors*

As previously mentioned, the site is located directly adjacent to the Kankakee River and Forked Creek. The landfill is partially located in the 100-year flood zone of the river. All property west of the site is either in the 100-year flood zone or floodway (approximately half of the property west of the landfill is within the floodway, according to Flood Insurance Rate Maps (FIRM)). Wetlands are found in the area surrounding the site. The wetland types include palustrine forested (deciduous broadleaf) that are temporary and seasonally flooded, and palustrine wetlands with unconsolidated bottom that are intermittently exposed. Soils in the area are generally characterized as silty clays and loams associated with the alluvial deposits within the Kankakee River basin.

According to the Will County Soil Survey, and general description of nature in the area (USDA, 1979), typical vegetation associated with this type of habitat includes a variety of oaks, sweetgum, maple, boxelder, hackberry, sycamore, and willow. Understory generally includes dogwood species, alders, honeysuckle, blackberry, and multiflora rose. Wildlife in the area includes a variety of both game and non-game species. Game species include white-tailed deer, eastern cottontail, fox and gray

squirrel, and turkey. Non-game species include raccoon, opossum, skunk, woodchuck, and numerous small mammals. Predators include red fox, coyote, and bobcat. Many varieties of birds are found in the area as well including songbirds, game birds, raptors (owls and hawks), and shore birds. Piscivorous birds such as kingfisher and green and blue herons also are present.

The Kankakee River and backwater area of Forked Creek include many species of fish and invertebrates, including mussels. Fish species common to the river system include several species of catfish, drum, carp, buffalo, gar, largemouth bass, smallmouth bass, white bass, walleye, crappie, bluegill, green sunfish, suckers, shad, and a variety of minnows and benthic fishes. Mussels are common in the river and are important to the removal of suspended material and nutrients (personal communication with Bob Masey, Illinois Department of Fish and Wildlife, December 2001).

The Illinois Natural Heritage Database was reviewed for endangered and threatened species by county. The database indicated 50 state-listed threatened or endangered species in Will County. Of these, two are federally-listed as endangered. The two federally-listed species include one plant, *Dalea foliosa*, the leafy prairie clover, and one invertebrate, *Somatochlora hineana*, Hine's Emerald Dragonfly. The clover is found in prairie habitat, which is not documented at the site nor in the surrounding area. The dragonfly is found in wetland habitat, which may occur at the site. Several of the COPIs were detected in concentrations slightly above screening levels in wetland sediment. Neither of the federally-listed species are identified as being found within the area of the Wilmington quadrangle (personal communication with Bob Masey, Illinois Department of Fish and Wildlife, December 2001). Therefore, it is expected that the federally-listed species found in Will County are not at risk to exposure to the site COPIs.

4.1.4 *Selection Of Chemicals, Indicator Species, And End Points.*

As mentioned previously, COPIs in surface water and sediment are the chemicals selected for evaluation in this ERA. Based on the detection of COPIs in surface water and sediment, aquatic receptors are expected to experience the greatest amount of exposure. Aquatic receptors (i.e., indicator species) include fish and invertebrate species common to the Kankakee River. The exposure pathway includes direct contact (dermal and ingestion) with the COPIs in surface water and sediment.

The assessment endpoint for the site is the maintenance of the aquatic ecosystems characterized by the sustained populations of animal

communities that are not impacted by anthropogenic chemicals introduced by site activities.

4.1.5 *Exposure Assessment*

The Reasonable Maximum Exposure (RME) estimates for the exposure of aquatic animals to the surface water and sediment of the Kankakee River and Forked Creek backwater area are presented in Table 4-3. These values are compared to the surface water and sediment screening levels given by U.S. EPA. Based on the single sampling event in 2001, these RME values represent a conservative estimate of the exposure to COPIs from the site. It is highly conservative to assume that the exposure is continuous at these concentrations. The route of exposure is direct contact to fish and benthic invertebrates. Since the surface water and sediment samples were collected either from the Forked Creek or the eastern shoreline of the Kankakee River it is also conservative to assume that the exposure concentration to fish in the river or benthic invertebrates is at the calculated RME. However, it is more likely that the RME would be much lower if surface water and sediment samples were taken from the entire habitat area of the endpoint receptors. This is particularly true with the fish exposed to the RME in surface water.

Seven constituents were detected in surface water or sediment at the site with a maximum detected value exceeding screening values. The RME of each of the constituents was compared to the screening values and an environmental effects quotient (EEQ) was then calculated by dividing the RME concentration by the screening value. COPIs for further evaluation were those constituents with an EEQ greater than 1.0. Calculated EEQs for are listed in Table 4-3. These values are considered to apply to both current and future land use. Identified COPIs are discussed further below.

4.1.6 *Toxicity Assessment/Ecological Effects Assessment (Constituents Of Potential Interest)*

One COPI with an EEQ value greater than 1.0 was identified in sediment (i.e., mercury; EEQ = 2.1). As discussed in Section 2.0, the 1995 sediment data for mercury indicated that mercury was not detected in any of the 10 sediment samples collected, but mercury was reported as "J" qualified estimates in each of the nine sediment samples collected in 2001. Quality control concerns with the 2001 mercury data, and the overall lack of correlation between the 1995 sediment data for mercury and the 2001 sediment data for mercury, render the sediment mercury data suspect. Consequently, the EEQ calculated from the suspect mercury data is considered overly conservative.

Surface water samples contained two COPIs with EEQ values greater than 1.0. These were iron (6.0) and lead (2.0). Iron is similar to barium and manganese in that it is generally a common metal in found in soils (Will County Soil Survey, 1979). A background concentration for iron of 15,900 mg/kg is reported for counties within metropolitan statistical areas, as established under 35 IAC 742.

The EEQ values for both surface water and sediment (Table 4-3) are relatively low and do not indicate a high level of concern.

4.1.7 *Fate And Transport Processes*

The evaluation of potential fate and transport pathways is necessary to determine which media and locations may be important in terms of constituent movement and subsequent exposure to ecological receptors. Fate and transport processes generally involve a transformation or movement of the chemical constituent via physical, chemical, or biological action.

Inorganics

Various inorganic constituents were detected in soil and sediment at the site. For metals, the pH of the soil/sediment and the valence state of the metal dictate the extent to which migration occurs. Very low pH (acidic) soil/sediment may allow for the leaching of metals. However, slightly acidic, neutral or high pH (basic) soils/sediments will generally not allow leaching to occur due to the tendency of metals to sorb to soils or precipitate out of solution. For inorganic constituents, the partitioning process is governed by complex electrochemical and physical interactions between the affected media and the chemical. These interactions involve the size and charge of the cation and the number of cation exchange sites on the individual particle surfaces. Migration of metals takes place primarily through the physical displacement of the particulates to which they are attached (ASTDR 1993a).

Metals are considered nonvolatile, such that volatilization from soil, sediment, or surface water is not generally considered a migration pathway. Additionally, chemically related processes, such as biodegradation and photolysis, are also not considered as typical fate and transport mechanisms because these processes are almost always associated with organic COPIs. Thus, the important pathways for metals would be limited primarily to wind (dust) transport and water (erosion) transport. However, physical factors such as vegetation, pavement, etc. generally impede wind and water transport. Consequently, these

pathways and, therefore, the migration of metallic constituents at the site, are considered insignificant.

Biotransformation and bioaccumulation are important processes in the fate of metals present at the site that methylate. Under certain conditions metals can be converted to a form that is soluble and mobile. Organisms may subsequently be exposed through their contact with and ingestion of water or soil. These pathways will be assessed based on the actual concentration of COPIs in surface water and sediment.

4.1.8 *Preliminary Exposure Pathways, Routes And Receptors Of Concern*

Generally, the habitat of the site is characterized as a terrestrial habitat consisting primarily of woodland, wetland, open fields, landfill, and the wastewater treatment area. The general area surrounding the site is characterized as rural with some residential areas to the south, north and east. To the west of the site is the Kankakee River and to the south is Forked Creek. Therefore, potential ecological receptors would include wildlife typical of riparian zones and wetlands and the aquatic environment (e.g., mice, voles, shrews, deer, rabbits, raccoons, opossums, snakes, snakes, toads, turtles, and various species of passerine birds and piscivorous birds). Preliminary exposure routes identified for these species include the incidental ingestion of, and dermal contact with, surface soil and surface water affected by COPIs at the site. As mentioned previously, however, soil at the site has not been found to contain constituents at concentrations that exceed ecological screening levels.

The riparian zone along the Kankakee River on the western boundary of the site offers suitable wildlife habitat with minimal human disturbance. Just to the south of the site, off-site, is Forked Creek. Forked Creek is also evaluated in this ERA and offers habitat features similar to those described for the Kankakee River.

The potentially exposed aquatic receptors present in the river and creek include benthic macroinvertebrates (e.g., mayflies, caddisflies, true flies, snails, and worms), fish (e.g., minnows, shiners, dace, bluegills, trout, and suckers), waterfowl, and piscivorous birds (e.g., the great blue heron). Preliminary exposure routes identified for these species include the incidental ingestion of, and dermal contact with, surface water and sediment affected by COPIs at the site.

4.1.9 *Assessment Endpoint*

An assessment endpoint represents an explicit expression of the environmental value to be protected. The assessment endpoint for this ERA is the maintaining of healthy aquatic and terrestrial regional

ecosystems, characterized by sustained populations of wildlife and vegetative communities that are not impacted by anthropogenic chemicals introduced by site activities.

4.1.10 *Measurement Endpoint*

A measurement endpoint represents a measurable ecological characteristic that is related to the assessment endpoint. In this assessment, it is assumed that healthy, unaffected ecosystems are characterized by the presence of chemical parameters in various media at concentrations equal to or lower than appropriate agency criteria and guidelines. Therefore, the measurement endpoints for the ERA are the chemical parameters measured in environmental media and their comparison to the ecological effects screening values used in this ERA.

4.2 *ECOLOGICAL EFFECTS ASSESSMENT*

Two types of stressors are typically evaluated as part of an ERA. These include chemical and physical stressors. Chemical stressors include a variety of contaminants that may have been released to the environment and potentially pose a threat to ecological habitats or wildlife. Physical stressors may include many factors such as habitat alteration or destruction typically associated with the implementation of remedial activities or background conditions. This ERA did not consider physical impacts as stressors, but focused on potential chemical stressors.

4.2.1 *Effects Assessment Methodology*

In the analysis phase of the ERA, site data were compared to screening values generated by the U.S. EPA. The U.S. EPA ETs are based on the lowest value from a combination of sources considered to be protective of the most sensitive organism in the medium. Thus, these values are presumed to be protective of all standard routes of exposure by an ecological receptor to a given medium. Often the sources utilized in determining ETs were the most toxic form of a given contaminant as well. The sources included peer-reviewed literature, regulatory agency criteria, and technical experts from federal agencies. Because ETs were developed from the lowest value identified as protective of the most sensitive organism, and usually for the most available form of a chemical, the ETs are considered to be very conservative.

EEQs were calculated using Reasonable Maximum Exposure constituent concentrations detected in surface water and sediment samples. EEQs greater than 1.0 suggest a potential ecological risk exists. This approach assumes that the constituent is fully bioavailable and that exposure is

constant. The guidelines for interpreting EEQs, adopted from Menzie et al., 1992 and Wentsel et al., 1994, are:

1. a quotient less than one indicates negligible risk to biota and no further testing is required;
2. a quotient between 1 and 10 indicates a small or slight potential for adverse effects;
3. a quotient between 10 and 100 indicates a significant potential for adverse effects; and
4. a quotient greater 100 indicates an expected adverse effect.

With respect to sediment data, individual EEQs were calculated to evaluate potential impacts to true aquatic sediments. With respect to surface water data, individual EEQs were calculated for the aquatic habitat of the river and creek combined. A summary of the surface water and sediment data evaluated in this assessment is provided in the following section with the results of the EEQ calculations. For calculated EEQs above 1.0, additional evaluation of exposure is used to determine the significance of the potential risk.

4.3 *RISK CHARACTERIZATION*

The risk characterization task involves the integration and evaluation of the results of the Exposure Assessment and the Ecological Effects Assessment to determine the qualitative degree of risk to aquatic receptors from exposure to the COPIs. As part of this task, the results of the ecological assessment are summarized and those areas/media where no further consideration is required from an ecological standpoint are identified.

4.3.1 *Discussion Of Aquatic Sediment Screening Results*

The preliminary list of COPIs in sediment is presented in Table 4-3. Risk characterization of sediment is discussed in detail in the following subsections.

Sediment from Kankakee River and Forked Creek

Results of the EEQ calculations are presented on Table 4-3. One COPI (mercury) had an EEQ above one.

The EEQs calculated for sediments are relatively low. Sediments from the river and creek represent potential concern to ecological receptors; however, sediment was collected only from the depositional area of Forked Creek, and the edge of the river bank near the site. Aquatic

receptors would be exposed to these sediments as well as sediments in the rest of their habitat utilization area. In addition, without reference sediment analysis, these RME values cannot be compared to average sediment values within the habitat range of the receptors, such as fish, piscivorous birds, and mobile invertebrates. Mussel species may be exposed to the RME values of the COPIs in sediment for a significant period of their life. However, mussel populations are typically found in the flowing deep water area of the river and not the slow backwater area of the creek or the shoreline of the river.

Because the potential for risk to ecological receptors that may result from exposure to sediments in the creek and river is low in general and EEQs are less than 10, no further evaluation of this area is necessary.

4.3.2 *Discussion of Surface Water Screening Results*

The preliminary list of COPIs in surface water is provided in Table 4-1. Risk characterization of these areas is discussed in detail below.

Surface Water from the Kankakee River and Forked Creek

Results of the EEQ calculations for surface water are presented on Table 4-3. Only two parameters, iron (6.0) and lead (2.0), exceeded the EEQ. Similar to the sediment samples, surface water samples were collected from the slow backwater area of Forked Creek (in an area not likely to be affected by the landfill) and the shoreline of the Kankakee River. Ecological receptors of the area are expected to be large river fish species, piscivorous birds, and invertebrates. Screening levels were exceeded for samples collected in the wetland area on site and in Forked Creek. Four of the five surface water samples collected from the Kankakee River did not contain constituents at concentrations exceeding screening levels (with the exception of barium). Most ecological receptors would not be consistently exposed to the relatively low concentrations of COPIs, because the receptors tend to occupy substantially larger home ranges than the area in close proximity to the site. Therefore, limited (incidental) risk to ecological receptors is expected to result from contact with surface water and no further evaluation of this medium is necessary.

4.3.3 *Uncertainty Analysis*

There are a number of difficulties involved in the prediction of ecological risk. A major source of uncertainty is the extrapolation of laboratory-derived data to the natural environment. Many factors that will influence a toxicological response are encountered in the real world, which cannot be predicted in the laboratory. Uncertainty is also introduced when one attempts to assess low-exposure risk in a multi-factor situation. Often it is

not possible to identify the causative agents, and dose-response parameters are thus difficult to characterize. Synergistic or antagonistic interactions complicate risk extrapolation procedures. Antagonistic interactions are more commonly encountered with metals. For example, trace metals are strongly adsorbed at particle surfaces, bound to carbonates, occluded in iron and/or manganese oxyhydroxides, bound to organic matter, bound to sulfide, bound to a matrix, or dissolved in the interstitial water (Campbell and Tessier, 1991). The complexity of trace metal bioavailability associated with these phases hinders the prediction of effects (Campbell and Tessier, 1991). The following summarizes the uncertainty factors involved with this risk assessment.

- The absorption factor used to predict uptake in the gastro-intestinal tract of any receptor was assumed to be 100%. Because the nature of this ERA is not species-specific, general absorption rates found in the literature for chromium, nickel, and zinc were not used in exposure calculations. Such calculations would have determined the amount of metals that would be absorbed into the gastrointestinal system (absorption factors were as low as 1% for beryllium (ATSDR, 1988)), when ingested by the indicator species. Uncertainty exists with the use of these absorption rates, since absorption rates have only been determined for a few laboratory animals, and the rates are highly dependent on the age and species of an animal.

- The use of toxicity data of nonindigenous species to extrapolate effects (e.g., ETs, LELs) to other species poses a potentially significant uncertainty. The metabolic degradation rates and many other physiological processes may not be the same for other species.

- This ERA has made multiple conservative assumptions that resulted in a truly worst-case screening. Significant assumptions included using the lowest availability values in reported ranges for toxicological data, assuming 100% internal uptake, 100% external bioavailability, and contamination of surface water and sediment at the RME of each COPI. In addition, it was assumed that wild populations of animals would receive maximum exposure; however this is not valid, because they are free to roam and inhabit areas more suitable to their needs. Exposure to worst-case conditions would thus likely yield insignificant additional risk.

- Quality control concerns with the 2001 mercury data, and the overall lack of correlation between the 1995 sediment data for mercury and the 2001 sediment data for mercury, render the sediment mercury data suspect. Consequently, the EEQ calculated from the suspect mercury data is considered overly conservative.

- The U.S. EPA ETs, as previously discussed, are selected to protect the receptor that is most likely to receive some adverse effect from contact with any given constituent. These receptors are not necessarily the most appropriate benchmark for site-specific receptors because the site-specific receptors may have different tolerances.

- Risks to aquatic receptors due to detected metals in wetland soils are judged to be minimal due to clay particles and organic matter retained in the wetlands at the site. Clay particles and organic matter bind metallic cations. Insoluble metallic oxides, hydroxides and sulfides readily precipitate and are inert. Thus, the formation of such precipitates limits the mobility of metals (DiToro, D.M. et al., 1990).

- Acid volatile sulfides (AVS), a naturally occurring group of compounds, have recently received much attention as indicators of bioavailability of metals in aquatic sediments (DiToro, D.M. et. al., 1990). Most aquatic systems probably have significant concentrations of AVS to render metals unavailable. Wetland soils and sediment in slow-moving water bodies, especially anaerobic soils, likely have greater concentrations of AVS than sediments in swift-moving water bodies.

4.4 *SUMMARY AND CONCLUSIONS*

A combination Tier I/Tier II ERA, consistent with U.S. EPA's primary guidance: *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (U.S. EPA, 1997) was conducted for the Celotex site. These guidelines are based on U.S. EPA's conceptual manual entitled, *Framework for Ecological Risk Assessment* (U.S. EPA, 1992) and *Draft Guidelines for Ecological Risk Assessment* (U.S. EPA, 1996).

Reasonable Maximum Exposure concentrations of constituents detected in sediment and surface water samples collected at the site during various field investigations were compared to screening values generated by the U.S. EPA. U.S. EPA ETs were based on the lowest value from a combination of sources considered to be protective of the most sensitive organism in the medium. Alternative screening values were obtained from the Ontario Ministry of Environment (MOE), 1996 lowest effect levels (LELs), for constituents lacking EPA values, where available.

Due to the complexity of the site with respect to potential exposure by ecological receptors, site data were combined for the two media evaluated, sediment and surface water. Results of the Ecological Effects Assessment

were evaluated in the Risk Characterization, and the following conclusions were drawn:

- Inorganic constituents (metals) were detected in surface water and sediment at concentrations that exceed screening levels in the Kankakee River and Forked Creek adjacent to the site. However, these concentrations were low enough that the site does not pose risks to ecological receptors that warrant further site remediation activities.

- No reference data were provided with which to compare site data. Therefore, to be conservative, the RME values were considered to be above background.

- The exposure to RME values in surface water and sediment is considered to be very conservative as the sample locations used to calculate the RME do not represent the complete home range for potential ecological receptors in the river and creek.

- The site does not appear to fall within the home range of any Federally listed threatened or endangered species in the State of Illinois.

5.0 SUMMARY AND CONCLUSIONS

Celotex retained ERM to review site investigation information obtained during four previous site investigations conducted at the facility, and to prepare a baseline risk assessment using the available site information. This report provides the results of that effort.

Site investigations have been conducted at the site on four separate occasions. The IEPA has conducted three separate investigations (one in 1989, one in 1995, and one in 1996), and the U.S. EPA conducted the most recent site investigation in 2001. Results of those investigations are presented in Section 2.0 of this report and were utilized in the human health risk assessment and the ecological risk assessment described in Sections 3.0 and 4.0, respectively, of this report.

Results of the three ground water sampling events conducted at the site indicate that arsenic is the only constituent of possible concern for ground water, and that arsenic in ground water may be the primary concern for the site overall. However, the Illinois Class II Groundwater Quality Standard for arsenic is 200 ppb, and the highest arsenic concentration reported for the site was 142 ppb. This suggests that arsenic is of little concern when evaluated within the context of the ground water resource at the site. Also, as discussed in Section 2.0, arsenic was not detected in surface water samples collected at the east bank of the Kankakee River, suggesting that discharge of arsenic-impacted ground water is not adversely affecting the river. Because the property between the landfill area and the river is floodplain and is not likely to be developed, there are no likely future exposure scenarios regarding arsenic-impacted ground water at the site.

The following sections summarize the conclusions of the human health risk assessment and the ecological risk assessment.

Human Health Risk Assessment

- COPIs identified in ground water, surface water, soil, and sediment included a combination of metals. Calculated risks and hazards were all below applicable thresholds (a total HI greater than 1 and a cumulative excess lifetime cancer risk of $1x10^{-4}$) for all exposure scenarios evaluated. Based on these results, the site does not pose risks to human health that warrant further site remediation activities.

- Inorganic constituents (metals) were detected in surface water and sediment at concentrations that exceed screening levels in the Kankakee River and Forked Creek adjacent to the site. However, these concentrations were low enough that the site does not pose risks to ecological receptors that warrant further site remediation activities.

- No reference data were provided with which to compare site data. Therefore, to be conservative, the RME values were considered to be above background.

- The exposure to RME values in surface water and sediment is considered to be very conservative as the sample locations used to calculate the RME do not represent the complete home range for potential ecological receptors in the Kankakee River and Forked Creek.

- The site does not appear to fall within the home range of any Federally listed threatened or endangered species in the State of Illinois.

Based on the results presented in this report, the Celotex Wilmington site does not pose risks to human health or the environment that warrant further site remediation activities. Therefore, it is recommended that no further action be approved for the site.

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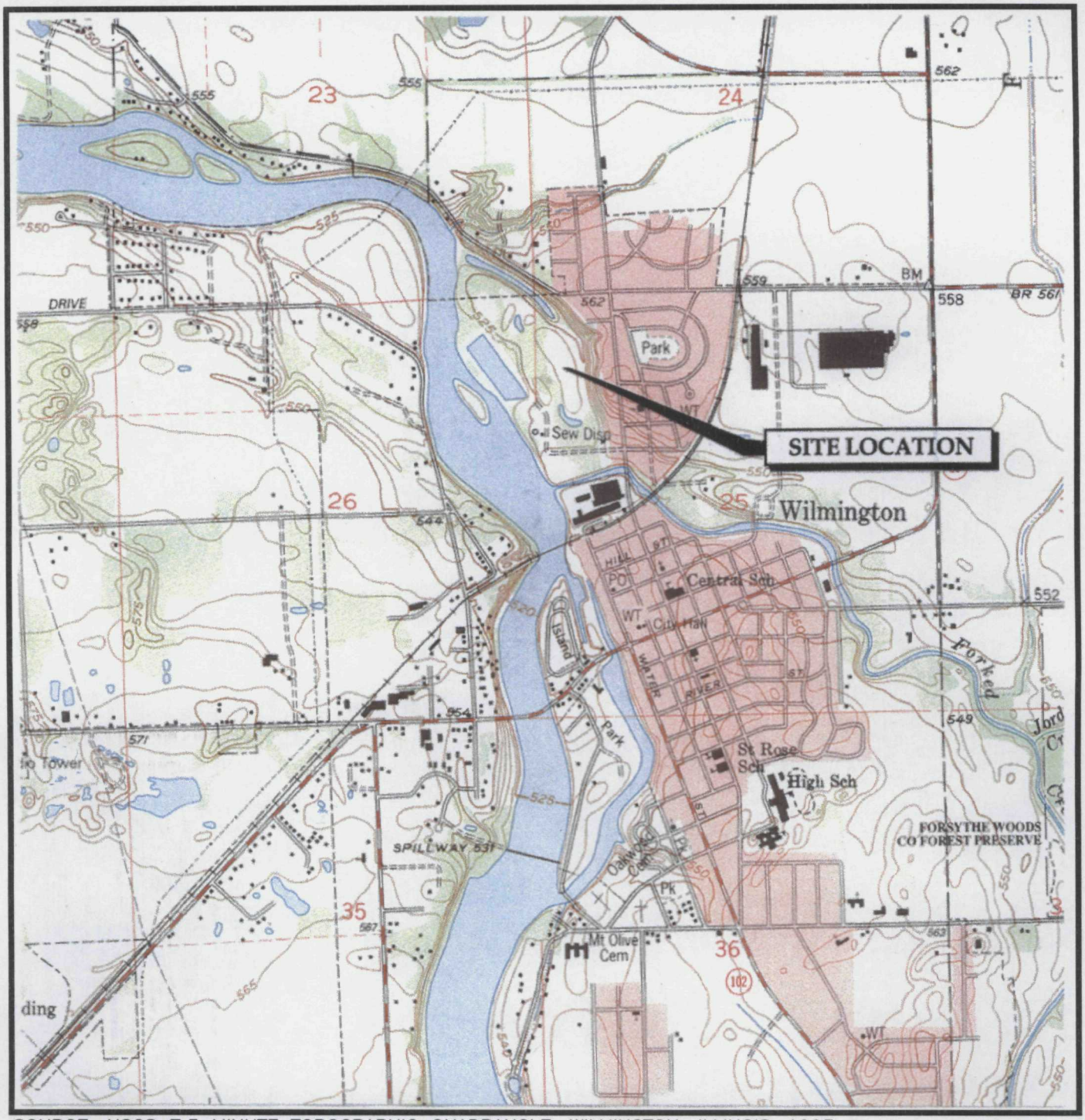
Figures



SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE: WILMINGTON, ILLINOIS–1993.

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ILLINOIS

QUADRANGLE LOCATION

SCALE 1:24000

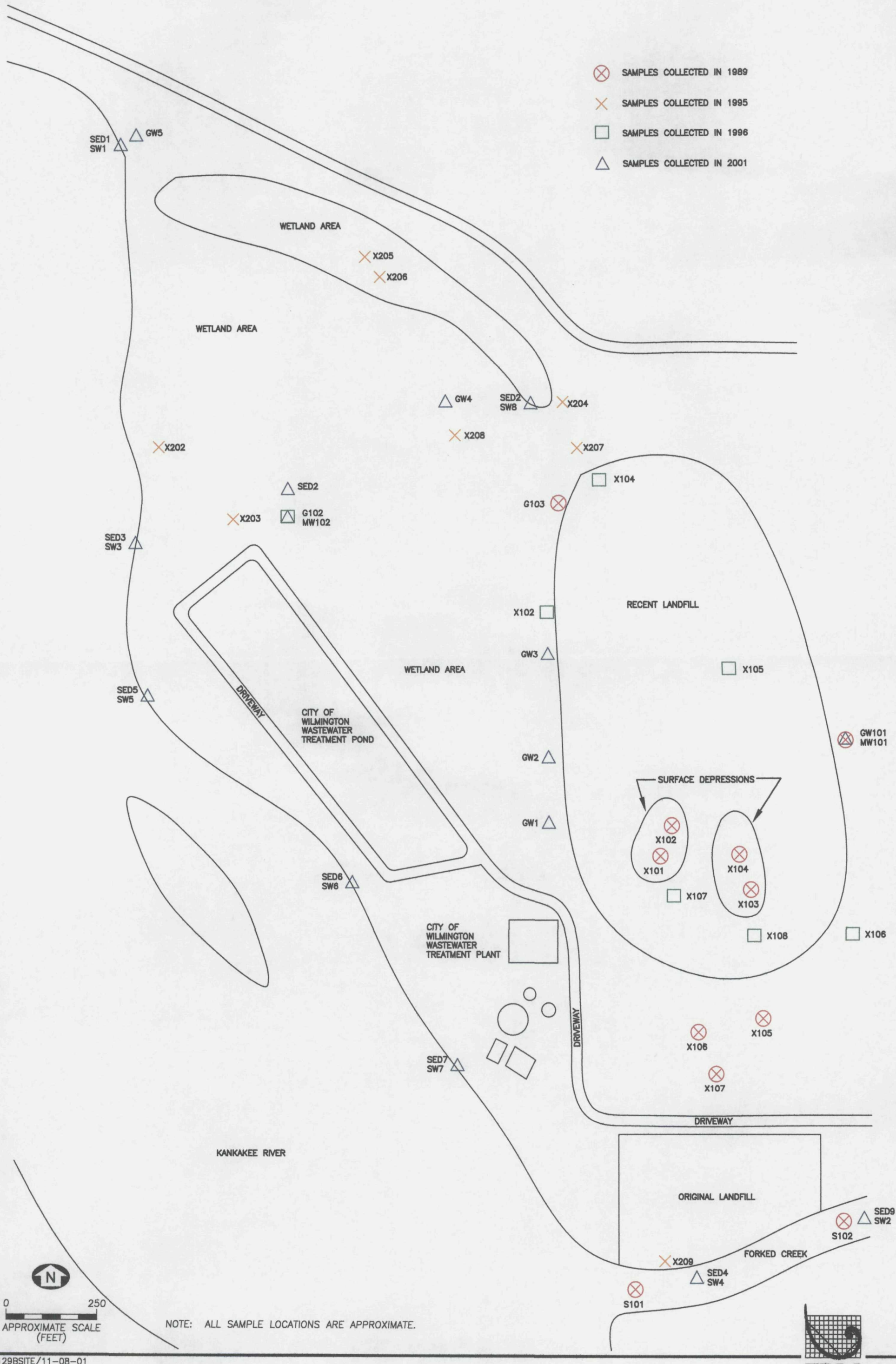
8128ATOP02 CELOTEX 1-3-02 MLW

Environmental Resources ERM Management

SITE LOCATION
CELOTEX CORP.
WILMINGTON, ILLINOIS

FIGURE
1-1

FIGURE 1-2
SITE LAYOUT AND SAMPLE LOCATIONS
CELOTEX
WILMINGTON, ILLINOIS



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Tables

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Table 2-1

Summary of Samples Collected During Four Site Investigations
Celotex Facility - Wilmington, Illinois

Site Screening Inspection - 1989			
Samples collected in November 1989 by IEPA			
Designation	Media	Depth	Analyte list
G101	Ground water	n/a	TCL analytes
G102	Ground water	n/a	TCL analytes
G103	Ground water	n/a	TCL analytes
S101	Surface water	n/a	TCL analytes
S102	Surface water	n/a	TCL analytes
X101	Soil	0-1'	TCL analytes
X102	Soil	8-9'	TCL analytes
X103	Soil	0-1'	TCL analytes
X104	Soil	2-3'	TCL analytes
X105	Soil	0-1'	TCL analytes
X106	Soil	0-1'	TCL analytes
X107	Soil	0-1'	TCL analytes
X108	Soil	0-1'	TCL analytes

Site Inspection Prioritization Report (SIP) - 1995			
Samples collected in June 1995 by IEPA			
Designation	Media	Depth	Analyte list
X201	Sediment	n/a	TCL analytes; dioxins/furans
X202	Sediment	n/a	TCL analytes; dioxins/furans
X203	Sediment	n/a	TCL analytes
X204	Sediment	n/a	TCL analytes
X205	Sediment	n/a	TCL analytes
X206	Dupe of X205	n/a	TCL analytes
X207	Sediment	n/a	TCL analytes; dioxins/furans
X208	Sediment	n/a	TCL analytes; dioxins/furans
X209	Sediment	n/a	TCL analytes
X210	Sediment	n/a	TCL analytes

Site Team Evaluation Prioritization (STEP) - 1996			
Samples collected in August 1996 by IEPA			
Designation	Media	Depth	Analyte list
G102 (?)	Ground water	n/a	TCL analytes
X101	Soil	0-4"	TCL analytes
X102	Soil	not reported	TCL analytes
X104	Soil	12-18"	TCL analytes
X105	Soil	6-8"	TCL analytes
X106	Soil	6-12"	TCL analytes
X107	Soil	8-18"	TCL analytes
X108	Soil	18"	TCL analytes

Site Assessment Report - 2001			
Samples collected in February 2001 by USEPA			
Designation	Media	Depth	Analyte list
GW-1	Ground water (GP)	above 10'	Metals and cyanide
GW-2	Ground water (GP)	above 13.5'	Metals and cyanide
GW-3	Ground water (GP)	above 13'	Metals and cyanide
GW-4	Ground water (GP)	above 10'	Metals and cyanide
GW-5	Ground water (GP)	above 9'	Metals and cyanide
MW-101	Ground water	n/a	Metals and cyanide
MW-102	Ground water	n/a	Metals and cyanide
SW-1	Surface water	n/a	Metals and cyanide
SW-2	Surface water	n/a	Metals and cyanide
SW-3	Surface water	n/a	Metals and cyanide
SW-4	Surface water	n/a	Metals and cyanide
SW-5	Surface water	n/a	Metals and cyanide
SW-6	Surface water	n/a	Metals and cyanide
SW-7	Surface water	n/a	Metals and cyanide
SW-8	Surface water	n/a	Metals and cyanide
SED-1	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-2	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-3	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-4	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-5	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-6	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-7	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-8	Sediment	n/a	Metals, cyanide, dioxin/furans
SED-9	Sediment	n/a	Metals, cyanide, dioxin/furans

TCL = Target Compound List

GP = geoprobe

Table 2-2

Summary of Ground Water Analytical Results
Celotex Facility - Wilmington, Illinois

Sample Designation ==>>			G101	G102	G103	G102 (?)	GW-1 (F)	GW-1	GW-1 (D)	GW-2 (F)	GW-2	GW-3 (F)	GW-3
Date Sampled ==>>			11/20/89	11/20/89	11/20/89	8/21-22/96	2/7/01	2/7/01	2/7/01	2/7/01	2/7/01	2/7/01	2/7/01
Analyte	**MCL**	**Class II**											
Volatiles (ug/l)													
Acetone	NE	700	15 B	68 B	25 B	ND	NA	NA	NA	NA	NA	NA	NA
Semivolatiles (ug/l)													
Diethylphthalate	NE	5600	10 U	10 U	0.4 J	ND	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	6	60	1.0 J	0.2 B	0.8 J	(?)	NA	NA	NA	NA	NA	NA	NA
Pesticides and PCBs (ug/l)			NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
Metals (ug/l)													
Aluminum	NE	NE	78 U	78 U	80 B	(?)	25.5 J	1000 J	732 J	20.4 J	977 J	28.3 J	1080 J
Antimony	6	24	2.1 U	2.1 U	2.1 U	(?)	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Arsenic	50	200	3.0 B	1.2 U	**51**	(?)	6.5	7.6	7.5	**131**	**142**	**100**	**114**
Barium	2000	200	260	47 B	690	(?)	120	134	134	921	907	887	943
Beryllium	4	500	0.6 U	0.6 U	0.6 U	(?)	0.10	0.20 J	0.25 J	0.10 UJ	0.10 U	0.21 J	0.10 U
Cadmium	5	50	1.2 U	1.2 U	2.0 B	(?)	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
Calcium	NE	NE	155000	115000 B	110000 B	(?)	135000	146000	147000	161000	159000	139000	151000
Chromium	100	1000	8.0 B	5.6 B	8.0 B	(?)	0.65	5.8	4.6	1.1	7	0.86	14.2
Cobalt	NE	1000	2.4 B	1.8 B	10	(?)	3.9	4.9	4.6	2.9	5.7	6.2	7.4
Copper	1300	650	1.7 U	2.0 B	1.7 U	(?)	0.70 U	4.4 J	2.8 J	0.70 U	15	0.70 U	10.6
Iron	300 (a)	5000	13500	336 B	14000 B	(?)	7280	10800 J	10100 J	27200	33600 J	15500	25800 J
Lead	15	100	1.0 B	0.8 U	<0.8	(?)	1.7 U	1.7 U	1.7 U	1.7 U	**25.5**	1.7 U	6
Magnesium	NE	NE	68000	45700	67000 B	(?)	47300	51200	51600	75200	73700	57400	62100
Manganese	50 (a)	10000	187	4.6 B	220 B	(?)	608	700	694	170	269	865	975
Mercury	2	10	0.05 U	0.05 U	0.05 U	(?)	0.10 U	0.10 U	0.10 U	0.10 J	0.10 UJ	0.14 J	0.10 U
Nickel	NE	2000	4.3 U	4.3 U	27 B	(?)	7.3	10.8	10.2	12.3	21.8	9.7	17.2
Potassium	NE	NE	29000	380 B	4300 B	(?)	1550 J	1960 J	1920 J	4780 J	5150 J	6910 J	7490 J
Selenium	50	50	1.2 U	1.2 U	1.2 U	(?)	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U
Silver	0.1 (a)	NE	2.3 U	2.3 U	2.3 U	(?)	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Sodium	NE	NE	19000	128000 B	89000	(?)	407000	43000	44300	71100	70900	1100	74700
Thallium	2	20	0.9 U	0.9 U	0.9 U	(?)	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Vanadium	NE	100	1.3 U	1.3 U	1.3 U	(?)	0.70 U	2.2	1.7	1.5	5.8	0.99	5.7
Zinc	5000 (a)	10000	12 B	11 U	11 U	(?)	1.1 U	7.2 J	4.1 J	1.1 U	61.5	1.1 U	25.2
Other constituents (ug/l)													
Cyanide	200	600	10 U	10 U	10 U	(?)	1.6 U	1.6 J	1.3 J	4.6 J	0.60 UJ	3.6 J	3.5 J
Sulfate	NE	NE	219000	68000 B	36000 B	(?)	NA	NA	NA	NA	NA	NA	NA

Notes:
J = Estimated value
NE = Not Established
ND = Not detected
Concentrations exceeding MCLs are shown in **BOLD**
MCL = US EPA Ground water/Drinking water maximum contaminant levels
(a) MCL - Secondary standard (non-enforceable)
Class II = Groundwater Quality Standards for Class II; General Resource Groundwater - Illinois Adm. Code 620.420; OR Section 742 Table E Tier 1
(?) Ground water sample reportedly collected by IEPA, however results not provided in report. USEPA Report (June 2001) indicated the sample "contained no contaminants of concern" (pg 4).

U = Constituent analyzed for but not detected; value reported is the sample quantitation limit
(D) = Duplicate
(F) = Filtered
NA = Not analyzed

Table 2-2

Summary of Ground Water Analytical Results
Celotex Facility - Wilmington, Illinois

Sample Designation ==>>			GW-4 (F)	GW-4	GW-5 (F)	GW-5	MW-101 (F)	MW-101	MW-102 (F)	MW-102	MW-102 (D)
Date Sampled ==>>			2/7/01	2/7/01	2/7/01	2/7/01	2/7/01	2/7/01	2/7/01	2/7/01	2/7/01
Analyte	**MCL**	**Class II**									
Volatiles (ug/l)											
Acetone	NE	700	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatiles (ug/l)											
Diethylphthalate	NE	5600	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	6	60	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides and PCBs (ug/l)			NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (ug/l)											
Aluminum	NE	NE	15.1 UJ	1530 J	19.7 J	4810	15.1 U	145 J	15.1 U	944 J	646 J
Antimony	6	24	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
Arsenic	50	200	4.2 U	16.5	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U
Barium	2000	200	95.9	122	79.6	112	142	239	41.0	45.8	46.7
Beryllium	4	500	0.10 UJ	0.28 J	0.11 J	0.22 J	0.10 U	0.26 J	0.10 U	0.27 J	0.10 U
Cadmium	5	50	0.6 U	0.60 U	0.60 U	0.60 U	0.60 U	1.7	0.60 U	0.60 U	0.60 U
Calcium	NE	NE	113000	150000	192000	210000	149000	151000	103000	102000	105000
Chromium	100	1000	0.81	11.6	0.50 U	12.3	0.70	1.6	0.50 U	2.1	1.0
Cobalt	NE	1000	1.1	3.5	0.70 U	3.2	0.70 U	0.70 U	0.70 U	0.70 U	0.70 J
Copper	1300	650	0.70 U	11.8	1.7 J	11.6	0.91 J	4.8 J	0.90 J	1.7 J	2.1 J
Iron	300 (a)	5000	330	19500 J	14.2 U	8090 J	5860	129000 J	14.2 U	1490 J	1100 J
Lead	15	100	1.7 U	6.9	1.7 U	2.6	1.7 U	3.3	1.7 U	1.7 U	1.7 U
Magnesium	NE	NE	61000	70600	142000	150000	73100	73200	40800	40800	41800
Manganese	50 (a)	10000	1130	1580	17.0	128	166	186	0.10 U	19.1	14.0
Mercury	2	10	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U	0.11	0.11 J	0.10 U	0.10 U
Nickel	NE	2000	6.8	13.8	2.3	12.3	1.3 U	1.6	1.9	3.3	2.7
Potassium	NE	NE	1810 J	2540 J	465 J	1880 J	23800 J	25500 J	594 J	847 J	885 J
Selenium	50	50	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U	4.8 U
Silver	0.1 (a)	NE	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Sodium	NE	NE	50700	52000	69900	72900	22600	22600	34900	35300	36700
Thallium	2	20	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U	6.2 U
Vanadium	NE	100	0.70 U	6.0	0.70 U	7.7	0.70 U	1.0	0.70 U	1.5	0.90
Zinc	5000 (a)	10000	1.1 U	32.5	8.6 J	20.8 J	1.1 U	1.9 J	1.1 U	2.6 J	2.2 J
Other constituents (ug/l)											
Cyanide	200	600	1.0 J	1.4 J	2.2 J	1.2 J	0.60 UJ	0.60 UJ	0.73 J	0.60 UJ	0.96 J
Sulfate	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
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(a) MCL - Secondary standard (non-enforceable)
U = Constituent analyzed for but not detected; value reported is the sample quantitation limit
(D) = Duplicate
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NA = Not analyzed
Class II = Groundwater Quality Standards for Class II; General Resource Groundwater - Illinois Adm. Code 620.420; OR Section 742 Table E Tier 1
(?) Ground water sample reportedly collected by IEPA, however results not provided in report. USEPA Report (June 2001) indicated the sample "contained no contaminants of concern" (pg 4)

Table 2-3

Summary of Surface Water Analytical Results
Celotex Facility - Wilmington, Illinois

Sample Designation ==>>		S101	S102	SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-6D	SW-7	SW-8
Date Sampled ==>>		11/20/89	11/20/89	2/9/01	2/9/01	2/8/901	2/9/01	2/8/01	2/8/01	2/8/01	2/8/01	2/9/01
Analyte	**AWQC**											
Volatiles (ug/l)												
Acetone	NE	10 U	60 B	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semivolatiles (ug/l)												
Diethylphthalate	NE	0.10 J	10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides and PCBs (ug/l)		BDL	BDL	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (ug/l)												
Aluminum	NE	175	162	3710 J	4930 J	262 J	5230 J	396 J	504 J	518 J	642 J	1500J
Barium	NE	43 B	43 B	69.4	65.0	43.6	67.8	46.5	41.7	40.2	42.0	44.4
Beryllium	5.3	0.6 U	0.6 U	0.46 J	0.18 J	0.10 U	0.53 J	0.10 U	0.20 J	0.10 U	0.10 U	0.26 J
Cadmium	2.2	1.2 U	**15 B**	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
Calcium	NE	99000	98000	60800	35800	82500	40100	86600	79500	77300	78400	55900
Chromium	NE	6 B	5.80 B	5.40	6.8	1.0	6.8	1.2	1.1	1.1	1.3	2.6
Cobalt	NE	2.8	5.20 B	2.4	3.2	0.70 U	3.2	0.70 U	0.70 U	0.70 U	0.75	0.70 U
Copper	9	2.4 B	2.40 B	9.0	**11.2**	1.9 J	**10.8**	2.4 J	1.6 J	2.2 J	2.7 J	4.3 J
Iron	1000	317	313	**6670 J**	**8380 J**	553 J	**8470 J**	827 J	774 J	801 J	994 J	**2340 J**
Lead	2.5	0.8 U	0.8 U	**5.7**	**6.2**	1.7 U	**6.6**	1.7 U	1.7 U	1.7	1.7 U	**3.0**
Magnesium	NE	41000	41000	21300	15800	31100	17700	34000	33800	33000	34300	21500
Manganese	NE	15 B	15 B	324	228	50.0	239	58.4	31.3	29.1	32.9	103
Nickel	52	4.3 U	4.3 U	8.6	10.6	2.2	10.4	2.7	2.4	2.2	1.9	3.6
Potassium	NE	1300 B	1300 B	4720 J	5120 J	2540 J	4730 J	2170 J	1820 J	1730 J	1760 J	3250 J
Silver	0.12	2.3 U	2.3	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Sodium	NE	11000	11000	12900	6740	20300	7590	17900	15900	15600	15500	14400
Vanadium	NE	1.8 U	1.8 U	7.9	10.7	0.84	11.1	0.78	0.97	1.2	2.0	2.9
Zinc	120	11 U	11 U	27.8	29.5	2.8 J	30.6	1.4 J	1.1 UJ	1.1 UJ	4.1 J	11.8 J
Other constituents (ug/l)												
Cyanide	5.2	10 U	10 U	0.72 J	1.3 J	1.1 J	1.3 J	1.4 J	1.1 J	1.0 J	0.60 U	1.7 J
Sulfate	NE	85000	88000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
J = Estimated value
ND = Not detected
D = Duplicate
U = Constituent analyzed for but not detected; value reported is the sample quantitiation limit
B = Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

AWQC = US EPA Ambient Water Quality Criteria for fresh surface water
Concentrations exceeding AWQC are in **BOLD**

Table 2-4

Summary of Sediment Analytical Results
Celotex Facility - Wilmington, Illinois

Sample Designation=>	X201	X202	X203	X204	X205	X206	X207	X208	X209	X210	SED-1
Date Sampled=>	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	2/9/01
Analyte											
Volatiles (ug/kg)											
Acetone	15 U	17 U	130	18 U	16 U	15 U	65	30	47	12 U	NA
1,1,1-Trichloroethane	15	17 U	20 U	47	16 J	15 U	16 U	15 U	7 J	13	NA
Semivolatiles (ug/kg)											
Phenanthrene	41 J	85 J	33 J	140 J	5200 U	510 U	540 U	490 U	100 J	400 U	NA
Anthracene	480 U	560 U	660 U	32 J	520 U	510 U	540 U	490 U	530 U	400 U	NA
Di-n-Butylphthalate	480 U	560 U	51 J	580 U	32 J	33 J	540 U	490 U	34 J	29 J	NA
Fluoranthene	70 J	130 J	70 J	170 J	37 J	34 J	540 U	490 U	360 J	400 U	NA
Pyrene	56 J	120 J	59 J	140 J	38 J	34 J	504 U	490 U	250 J	400 U	NA
Butylbenzylphthalate	480 U	38 J	660 U	580 U	520 U	510 U	540 U	490 U	530 U	400 U	NA
Benzo(a)anthracene	42 J	52 J	660 U	96 J	520 U	510 U	540 U	490 U	120 J	400 U	NA
Dibenzo(a,h)anthracene	480 U	560 U	660 J	580 U	35 J	510 U	540 U	490 U	530 U	400 U	NA
Chrysene	41 J	68 J	50 J	130 J	520 U	27 J	29 J	490 U	140 J	400 U	NA
bis(2-Ethylhexyl)phthalate	30 J	560 U	43 J	580 U	30 J	510 U	37 J	490 U	530 UBJ	400 UJB	NA
Benzo(b)fluoranthene	27 J	61 J	660 U	90 J	510 U	26 J	540 U	490 U	120 J	400 U	NA
Benzo(k)fluoranthene	480 U	43 J	660 U	65 J	510 U	510 U	360 J	490 U	120 J	400 U	NA
Benzo(g,h,i)perylene	480 U	44 J	44 J	3000	38 J	510 U	360 J	490 U	68 J	400 U	NA
Benzo(a)pyrene	33 J	51 J	37 U	170 U	520 U	510 U	92 J	490 U	110 J	400 U	NA
Indeno (1,2,3-cd)pyrene	480 U	46 J	39 J	580 U	520 U	26 J	42 J	490 U	67 J	400 U	NA
Pesticides and PCBs (ug/kg)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)											
Aluminum	4130	7650	14700	8280	15600	14600	11500	10500	5760	6400	10500
Antimony	0.35 U	0.68 U	0.61 U	0.55 U	0.55 U	0.45 U	0.56 U	0.42 U	0.45 U	0.44 U	0.74 UJ
Arsenic	3.9	7.5	6.5	6.5	8.4	8.3	6.6	5.8	4.3	2.6	8.4
Barium	27.3 B	67.6 B	110	82	121	111	193	100	54.6	39.3 B	105
Beryllium	0.32 B	0.52 B	0.89 B	0.56 B	0.95 B	0.88 B	0.68 B	0.63 U	0.4 B	0.40 B	0.76
Cadmium	0.20 B	0.49 B	0.72 B	0.46 B	0.75 B	0.76 B	0.55 B	0.70 B	0.39 B	0.31 B	0.2
Calcium	19400	27700	15400	13700	9960	9820	10900	43400	15700	17600	26100
Chromium	6.6	11.9	21.7	13.3	20.9	19.6	16.4	14.9	8.4	8.7	17.5
Cobalt	3.1 B	6.3 B	7.9 B	6.3 B	8.8 B	8.3 B	9.0 B	9.1 B	4.0 B	2.4 B	8.1
Copper	5.2	17.4	27.7	16.8	19.8	19.0	19.3	12.0	11.2	10.7	24.6
Iron	8740	15300	20800	14300	27700	22000	14300	21100	8500	7180	21800
Lead	12.3	17.8	25.4	21.1	24.9	23.6	16.7	10.6	17.6	14.7	32
Magnesium	10300	9450	8450	8460	6490	6390	5490	15200	6020	6010	11500
Manganese	73.2	597	157	150	549	579	192	1310	93.9	81.3	778
Mercury	0.12 U	0.18 U	0.19 U	0.14 U	0.14 U	0.15 U	0.15 U	0.12 U	0.12 U	0.2 U	0.13 J
Nickel	7.0 B	15	24	19	23	22	29.3	18	10.3	7.8 B	19.8
Potassium	758 B	1500 B	2200	1490	2130	2030	2300	2110	1040 B	1210	1420 J
Selenium	0.53 U	1.0 U	0.92 U	0.83 U	0.83 U	0.67 U	0.83 U	0.63 U	0.67 U	0.66 U	1.5
Silver	0.18 U	0.34 U	0.31 U	0.28 U	0.28 U	0.22 U	0.28 U	0.21 U	0.22 U	0.22 U	0.15 J
Sodium	40.8 U	78.1 U	145 B	63.6 U	64.9 B	51.6 U	120 B	70.5 B	51.6 U	50.8 U	299 J
Thallium	0.53 U	1.1 B	0.92 U	0.83 U	0.96 B	0.74 B	0.83 U	0.63 U	0.67 U	0.66 U	1.8 U
Vanadium	10	15.4 B	27.5	17.2	27.4	26.5	20.1	20.1	13.4	11.1	22.7
Zinc	31.5	66.9	101	69.7	101	96.0	88.1	65.4	50.3	40.7	86.6
Cyanide	0.49 U	0.85 U	0.91 U	0.44 U	0.71 U	0.67 U	0.54 U	0.52 U	0.51 U	0.65 U	0.12 J
Dioxins/Furans (ug/kg)											
OCDD	2.8	0.42 JS	NA	NA	NA	NA	0.37	10	NA	NA	0.00011 U
OCDF	1.0 J	0.19 U	NA	NA	NA	NA	0.18 U	8.7	NA	NA	0.000005 U

Notes:

J = Estimated value N = Presumptive evidence ND = Not detected

U = Constituent analyzed for but not detected; value reported is the sample quantitation limit

B = Analyte was detected in an associated blank.

Table 2-4

Summary of Sediment Analytical Results
Celotex Facility - Wilmington, Illinois

Sample Designation=>	SED-4	SED-5	SED-6	SED-6D (a)	SED-7	SED-8	SED-9
Date Sampled=>	2/9/01	2/8/01	2/8/01	2/8/01	2/8/01	2/9/01	2/10/01
Analyte							
Volatiles (ug/kg)							
Acetone	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	NA
Semivolatiles (ug/kg)							
Phenanthrene	NA	NA	NA	NA	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	NA	NA
Di-n-Butylphthalate	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA
Butylbenzylphthalate	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA
Indeno (1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA
Pesticides and PCBs (ug/kg)	NA	NA	NA	NA	NA	NA	NA
Metals (mg/kg)							
Aluminum	6910	6090	7010	6630	10900	8720	5400
Antimony	0.65 UJ	0.60 UJ	0.69 J	0.63 UJ	0.64 UJ	0.71 UJ	0.61 UJ
Arsenic	4.4	4.0	4.7	4.5	6.1	4.3	5.6
Barium	64.9	72.3	79.8	69.3	106.0	84.6	56.2
Beryllium	0.56	0.48 J	0.55	0.54	0.72	0.63	0.38 J
Cadmium	0.18	0.14 U	0.18	0.15 U	0.31	0.17 U	0.15 U
Calcium	199900	19000	14600	13600	13400	16100	86600
Chromium	11.4	11.6	12.3	11.6	23.6	14.1	8.5
Cobalt	5.1	5.2	5.4	4.9	6.7	7.4	4.8
Copper	13.5	18.4	24.5	22.3	38.3	15.6	10.6
Iron	15400	13500	14800	13400	20400	19600	15100
Lead	23.0	37	55.3	46.5	40.1	15.6	15.6
Magnesium	7980	8610	6430	6390	7250	9400	14500
Manganese	253	378.0	474	383	393	904	660
Mercury	0.13 J	0.66 J	2.0 J	0.44 J	0.61 J	0.12 J	0.090 J
Nickel	13.6	11.8	14.2	13.3	18.9	16.3	10.6
Potassium	774 J	869 J	854 J	807 J	1360 J	1250 J	1050 J
Selenium	1.3	1.2 U	1.2 U	1.2 U	1.3	1.5	1.2 U
Silver	0.13 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U	0.12 U
Sodium	273 J	261 J	279 J	268 J	322 J	244 J	309 J
Thallium	1.6 U	1.5 U	1.6 U	1.6 U	1.6 U	1.8 U	1.5 U
Vanadium	16.7	13.9	15.7	14.6	23.0	18.3	13.2
Zinc	60.7	61.8	80.7	74.7	102	60.5	44.9
Cyanide	0.040 UJ	0.090 J	0.070 J	0.040 J	0.080 J	0.16 J	0.040 UJ
Dioxins/Furans (ug/kg)							
OCDD	0.00025	0.000048	0.000135	0.000204	0.000174	0.000037	0.00921
OCDF	0.000015	0.000001 U	0.000013	0.000001 U	0.000009	0.000001 U	0.000124

Notes:

J = Estimated value ND = Not detected

U = Constituent analyzed for but not detected; value reported is the sample quantitation limit

B = Analyte was detected in an associated blank.

(a) SED-6D is a duplicate of SED-6

Table 2-5

Summary of Soil Analytical Results
Celotex Facility - Wilmington, Illinois

			Sample Designation ==>>	X101	X102D	X103	X104D	X105D	X106	X107	X108
			Sample Depth ==>>	0-1'	8-9'	0-1'	2-3'	0-1'	0-1'	0-1'	0-1'
			Date Sampled ==>>	11/20/89	11/20/89	11/20/89	11/20/89	11/20/89	11/20/89	11/20/89	11/20/89
Analyte	Ingestion*	Inhalation*	Class II*								
Volatiles (ug/kg)											
Methylene Chloride	85000	13000	200	21 U	950 U	2 J	2 J	4 J	1.00 J	9 U	6U
Acetone	7800000	1000000000	16000	42 U	1900 U	5 J	12 U	44 J	220 D	15 J	12 U
2-Butanone (MEK)	NE	NE	NE	42 U	1900 U	11 U	12 U	14 J	56	19 U	12 U
Toluene	16000000	650000	29000	31	400 J	6 U	6U	7 U	57	9 U	6 U
Semivolatiles (ug/kg)											
Phenol	47000000	NE	100000	430 J	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
4-Methylphenol	NE	NE	NE	1100 J	840 J	750 U	790 U	890 U	190000 U	1200 U	810 U
Benzoic acid	310000000	NE	400000	840 J	6100 U	3700 U	3800 U	4300 U	930000 U	290 J	3900 U
Naphthalene	1600000	170000	18000	2700 U	340 BJ	750 U	790 U	890 U	190000 U	1200 U	810 U
2-Methylnaphthalene	NE	NE	NE	2700 U	1400 B	750 U	790 U	890 U	190000 U	1200 U	810 U
Acenaphthene	4700000	NE	2900000	140 J	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
Dibenzofuran	NE	NE	NE	50 J	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
Diethylphthalate	63000000	2000000	470000	2700 U	1300 U	28 J	3800 U	4300 U	930000 U	1200 U	810 U
Fluorene	3100000	NE	2800000	78 J	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
Pentachlorophenol	3000	NE	140	140 J	6100 U	3700 U	3800 U	4300 U	930000 U	1200 U	810 U
Phenanthrene	NE	NE	NE	790 BJ	110 BJ	75 BJ	8 BJ	890 U	190000 U	1200 U	810 U
Anthracene	23000000	NE	59000000	2000 BJ	1300 U	12 BJ	790 U	890 U	190000 U	1200 U	810 U
Di-n-Butylphthalate	7800000	2300000	2300000	2700 U	480 BJ	87 BJ	7 BJ	890 U	190000 U	1200 U	810 U
Fluoranthene	3100000	NE	21000000	9400 B	1300 U	100 BJ	16 BJ	890 U	190000 U	1200 U	810 U
Pyrene	2300000	NE	21000000	7400 B	1300 U	86 BJ	24 BJ	890 U	12000 J	1200 U	810 U
Butylbenzylphthalate	16000000	930000	930000	2700 U	830 J	750 U	790 U	890 U	190000 U	1200 U	810 U
Benzo(a)anthracene	900	NE	8000	2600 BJ	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
Chrysene	88000	NE	800000	2900 B	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
bis(2-Ethylhexyl)phthalate	46000	31000000	31000000	3800 B	5500 B	750 U	790 U	55 BJ	190000 U	1200 U	810 U
Benzo(b)fluoranthene	900	NE	25000	930 J	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
Benzo(a)pyrene	90	NE	82000	670 J	1300 U	750 U	790 U	890 U	190000 U	1200 U	810 U
Pesticides and PCBs (ug/kg)											
Heptachlor epoxide	70	5000	3300	67 U	31 U	19 U	19 U	22 U	8 U	3.5 J	40 U
Dieldrin	40	1000	20	135 U	4 J	1 J	39 U	44 U	16 U	18 J	40 U
4,4'-DDE	2000	NE	270000	135 U	62 U	37 U	39 U	44 U	16 U	61 U	1 J
4,4'-DDT	2000	NE	160000	135 U	62 U	37 U	39 U	44 U	16 U	22 J	40 U
Endosulfan sulfate	470000	NE	90000	135 U	62 U	37 U	39 U	44 U	16 U	61 U	40 U
Endrin Ketone	23000	NE	5000	135 U	62 U	37 U	39 U	44 U	16 U	61 U	40 U
alpha-Chlordane	1800	72000	48000	673 U	310 U	185 U	195 U	218 U	80 U	7 J	199 U
Aroclor-1242	1000	NE	NE	673 U	310 U	185 U	195 U	218 U	80 U	307 U	199 U
Aroclor-1260	1000	NE	NE	550 J	619 U	371 U	389 U	437 U	160 U	613 U	199 U
Metals (mg/kg)											
Aluminum	NE	NE	NE	8000	4200	6300	16600	5200	1470	8400	3200
Antimony	31	NE	0.024	4.6	1.2	0.3 U	0.60 B	0.5 U	0.4	0.6 U	0.5 U
Arsenic	11.3	750	0.2	1.70 B	0.9 B	2.2	8.6	3.5	1.8	11	3
Barium	5500	690000	2	200	74	66	170	61	22 B	98	74
Beryllium	160	1300	0.5	0.4 U	0.2 I	0.50 B	1.4	0.5	0.30 B	0.8 B	0.41 B
Cadmium	78	1800	0.05	0.8 U	0.4 U	3.6	9.3	3.0	0.80 B	7.6	2
Calcium	NE	NE	NE	20700	4600	11200	34900	3640	3900	18700	4100
Chromium	230	270	1	33	16	16	28	8.9	3.6	18 U	4.7
Cobalt	4700	NE	1	2.10 B	0.6 U	4.5 B	14	4.90 B	0.90 B	7.9 B	3.0 B
Copper	2900	NE	0.65	120	45	14	51	10 B	7.4	32	7.7
Iron	NE	NE	5	4900	3000	12600	32600	13500	3100	24700	6700
Lead	400	NE	0.1	150	56	32	65	13	20	85	45.0
Magnesium	NE	NE	NE	2200 B	1160 B	6900 B	12800	13000	1700	6900	1500
Manganese	3700	6900	10	500	150	370	1100	560	44	600	370
Mercury	23	10	0.01	0.16	0.17	0.01 U	0.15	0.11	0.01 U	0.14	0.016 B
Nickel	1600	13000	2	7.10 B	2.9 B	11	29	10	12	34	5.8 U
Potassium	NE	NE	NE	185 U	91 U	680 B	1500	320 B	120 B	11000	5500
Selenium	390	NE	0.05	0.8 U	0.4 U	0.2 U	0.3 U	0.3 U	0.2 U	0.5 B	0.3 U
Silver	390	NE	NE	1.6 U	0.8 U	0.4 U	0.5 U	0.5 U	0.4 U	0.6 U	0.55 U
Sodium	NE	NE	NE	390	1000 B	230 B	160	150 B	11 U	15 U	14 U
Thallium	6.3	NE	0.02	0.6 U	0.3 U	0.2 U	0.3	0.2 U	0.2 U	0.4 U	0.2 U
Vanadium	550	NE	0.1	11 B	7.7 B	16	36	9.50 B	19	22	8.7 B
Zinc	23000	NE	10	570	140	71	250	51	58	250	58.0
Other Analytes (mg/kg)											
Cyanide	1600	NE	0.6	43	10.6	0.83 U	1.2 U	0.7 U	1.0 U	1.5 U	1.0 U

Notes: ND = Not detected J = Estimated value N = Presumptive evidence

U = Constituent analyzed for but not detected; value reported is the sample quantitaion limit

B = Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

D = Identifies all compounds identified in an analysis at the secondary dilution factor.

* = Illinois EPA Section 742. Table A: Tier 1 Soil Remediation Objectives for Residential Properties; Class II values listed for metals and cyanide are in mg/l and are derived from TCLP or SPLP analyses

(?) Soil sample reportedly collected by IEPA, however results not provided in report. Results on this table taken from STEP Report (IEPA, 1997) - Table 2 "Key Soil Sample Summary"

Table 2-5

Summary of Soil Analytical Results
Celotex Facility - Wilmington, Illinois

			Sample Designation ==>>	X101	X102	X104	X105	X106	X107	X108
			Sample Depth ==>>	0-4"	?	12-18"	6-8"	6-12"	8-18"	18"
			Date Sampled ==>>	8/21-22/96	8/21-22/96	8/21-22/96	8/21-22/96	8/21-22/96	8/21-22/96	8/21-22/96
Analyte	Ingestion*	Inhalation*	Class II*							
Volatiles (ug/kg)										
Methylene Chloride	85000	13000	200	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Acetone	7800000	1000000000	16000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
2-Butanone (MEK)	NE	NE	NE	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Toluene	16000000	650000	29000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Semivolatiles (ug/kg)										
Phenol	47000000	NE	100000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
4-Methylphenol	NE	NE	NE	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Benzoic acid	310000000	NE	400000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Naphthalene	1600000	170000	18000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
2-Methylnaphthalene	NE	NE	NE	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Acenaphthene	4700000	NE	2900000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Dibenzofuran	NE	NE	NE	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Diethylphthalate	63000000	2000000	470000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Fluorene	3100000	NE	2800000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Pentachlorophenol	3000	NE	140	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Phenanthrene	NE	NE	NE	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Anthracene	23000000	NE	59000000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Di-n-Butylphthalate	7800000	2300000	2300000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Fluoranthene	3100000	NE	21000000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Pyrene	2300000	NE	21000000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Butylbenzylphthalate	16000000	930000	930000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Benzo(a)anthracene	900	NE	8000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Chrysene	88000	NE	800000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
bis(2-Ethylhexyl)phthalate	46000	31000000	31000000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Benzo(b)fluoranthene	900	NE	25000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Benzo(a)pyrene	90	NE	82000	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Pesticides and PCBs (ug/kg)										
Heptachlor epoxide	70	5000	3300	(?)	(?)	(?)	(?)	(?)	(?)	(?)
Dieldrin	40	1000	20	(?)	NA	(?)	5.3	(?)	70	(?)
4,4'-DDE	2000	NE	270000	(?)	NA	(?)	(?)	(?)	(?)	(?)
4,4'-DDT	2000	NE	160000	(?)	NA	(?)	(?)	(?)	8.8 P	(?)
Endosulfan sulfate	470000	NE	90000	(?)	NA	(?)	(?)	(?)	5.3 P	(?)
Endrin Ketone	23000	NE	5000	(?)	NA	(?)	(?)	(?)	5.3 P	(?)
alpha-Chlordane	1800	72000	48000	(?)	NA	(?)	(?)	(?)	30	(?)
Aroclor-1242	1000	NE	NE	54	NA	72P	330P	27JP	3400 PE	(?)
Aroclor-1260	1000	NE	NE	(?)	NA	(?)	(?)	(?)	(?)	(?)
Metals (mg/kg)										
Aluminum	NE	NE	NE	6040	NA	5320	5320	6130	6420	5570
Antimony	31	NE	0.024	(?)	NA	(?)	(?)	(?)	(?)	(?)
Arsenic	11.3	750	0.2	5.6	NA	3.0	1.3 B	2.4	1.8 B	1.1 B
Barium	5500	690000	2	64	NA	64.6	50.4	46.6	77.3	56.9
Beryllium	160	1300	0.5	(?)	NA	(?)	(?)	(?)	(?)	(?)
Cadmium	78	1800	0.05	(?)	NA	(?)	(?)	(?)	(?)	(?)
Calcium	NE	NE	NE	15000	NA	44400	6940	3090	4930	4360
Chromium	230	270	1	11.0	NA	9.7	11.0	14.5	22.0	12.3
Cobalt	4700	NE	1	(?)	NA	(?)	(?)	(?)	(?)	(?)
Copper	2900	NE	0.65	12.1	NA	11.9	15.1	16.4	93.9	9.3
Iron	NE	NE	5	14400	NA	14400	7980	10500	44400	6700
Lead	400	NE	0.1	38.6	NA	6.3	10.7	10.2	79.2	6.4
Magnesium	NE	NE	NE	7780	NA	10100	2430	2960	2060	3430
Manganese	3700	6900	10	682	NA	620	162	285	118	75.7
Mercury	23	10	0.01	0.06 U	NA	0.10 B	0.05 U	0.06 U	0.3	0.05 U
Nickel	1600	13000	2	12.6	NA	10.7	8.1 B	13.1	9.3 B	8.1 B
Potassium	NE	NE	NE	(?)	NA	(?)	(?)	(?)	(?)	(?)
Selenium	390	NE	0.05	1.0 B	NA	0.62 B	0.42 U	0.58	0.55 B	0.41 U
Silver	390	NE	NE	1.0 U	NA	3.0	1.5 B	1.0 U	1.2 B	0.89 U
Sodium	NE	NE	NE	(?)	NA	(?)	(?)	(?)	(?)	(?)
Thallium	6.3	NE	0.02	0.61 U	NA	0.60 U	0.55 U	0.61 U	0.69	0.54 U
Vanadium	550	NE	0.1	14.4	NA	13.2	11.7	16.9	12.4 B	15.5
Zinc	23000	NE	10	82	NA	38.7	69.8	65	336	59.9
Other Analytes (mg/kg)										
Cyanide	1600	NE	0.6	0.28 B	NA	0.34 B	0.20 B	0.27 B	17.9	0.03

Notes: D = Not detected J = Estimated value N = Presumptive evidence

U = Constituent analyzed for but not detected; value reported is the sample quantitaion limit

B = Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action

D = Identifies all compounds identified in an analysis at the secondary dilution factor.

* = Illinois EPA Section 742, Table A: Tier 1 Soil Remediation Objectives for Residential Properties; Class II values listed for metals and cyanide are in mg/l and are derived from TCLP or SPLP analyses

(?) Soil sample reportedly collected by IEPA, however results not provided in report. Results on this table taken from STEP Report (IEPA, 1997) - Table 2 "Key Soil Sample Summary"

TABLE 3-1
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CELOTEX SITE
WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Ground water
Exposure Medium:	Ground water
Exposure Point:	All Areas

Chemical of Potential Interest	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic (As)	ug/L	37.55	NA	1.42E+02	--	ug/L	142	Max	(4)
Iron (Fe)	ug/L	30,154	NA	1.29E+05	--	ug/L	129,000	Max	(4)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

(1) Shapiro-Wilk W Test indicates data are normally distributed.

(2) Shapiro-Wilk W Test indicates data are log-normally distributed.

(3) Shapiro-Wilk W Test inconclusive; log-normal distribution assumed.

(4) 95% UCL exceeds maximum detected concentration; therefore, maximum concentration used for EPC.

(5) Shapiro-Wilk W Test inconclusive; normal distribution assumed.

TABLE 3-2
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CELOTEX SITE
WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas

Chemical of Potential Interest	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic (As)	mg/kg	4.567	NA	1.10E+01	--	mg/kg	8.226	95% UCL-T	W - Test (2)
Iron (Fe)	mg/kg	14,249	NA	4.44E+04	--	mg/kg	25,907	95% UCL-T	W - Test (2)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

(1) Shapiro-Wilk W Test indicates data are normally distributed.

(2) Shapiro-Wilk W Test indicates data are log-normally distributed.

(3) Shapiro-Wilk W Test inconclusive; log-normal distribution assumed.

(4) 95% UCL exceeds maximum detected concentration; therefore, maximum concentration used for EPC.

(5) Shapiro-Wilk W Test inconclusive; normal distribution assumed.

TABLE 3-3
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CELOTEX SITE
WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas

Chemical of *Potential* Interest	Units	Arithmetic Mean	95% UCL of Normal *Data*	Maximum Detected *Concentration*	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	*Medium* EPC Statistic	*Medium* EPC Rationale
Aluminum (Al)	ug/L	1,752	NA	5.23E+03	--	ug/L	5,230	Max	(4)
Copper (Cu)	ug/L	5.53	NA	1.12E+01	--	ug/L	11.2	Max	(4)
Iron (Fe)	ug/L	2,965	NA	8.47E+03	--	ug/L	8,470	Max	(4)
Lead (Pb)	ug/L	2.57	NA	6.60E+00	--	ug/L	6.6	Max	(4)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

(1) Shapiro-Wilk W Test indicates data are normally distributed.

(2) Shapiro-Wilk W Test indicates data are log-normally distributed.

(3) Shapiro-Wilk W Test inconclusive; log-normal distribution assumed.

(4) 95% UCL exceeds maximum detected concentration; therefore, maximum concentration used for EPC.

(5) Shapiro-Wilk W Test inconclusive; normal distribution assumed.

TABLE 3-4
MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY
CELOTEX SITE
WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas

Chemical of Potential Interest	Units	Arithmetic Mean	95% UCL of Normal Data	Maximum Detected Concentration	Maximum Qualifier	EPC Units	Reasonable Maximum Exposure		
							Medium EPC Value	Medium EPC Statistic	Medium EPC Rationale
Arsenic (As)	mg/kg	5.721	6.38	8.40E+00	--	mg/kg	6.38	95% UCL-N	W - Test (1)
Cadmium (Cd)	mg/kg	0.22	NA	8.30E-01	--	mg/kg	0.50	95% UCL-T	W - Test (2)
Copper (Cu)	mg/kg	18.22	21.22	3.83E+01	--	mg/kg	21.22	95% UCL-N	W - Test (1)
Iron (Fe)	mg/kg	16,627	18,745	2.77E+04	--	mg/kg	18,745	95% UCL-N	W - Test (1)
Lead (Pb)	mg/kg	25.1	29.68	5.10E+01	--	mg/kg	29.68	95% UCL-N	W - Test (1)
Manganese (Mn)	mg/kg	459.2	587.38	1.31E+03	--	mg/kg	587.38	95% UCL-N	W - Test (1)
Mercury (Hg)	mg/kg	0.214	NA	1.22E+00	--	mg/kg	0.32	95% UCL-T	W - Test (3)
Nickel (Ni)	mg/kg	17.62	19.84	2.93E+01	--	mg/kg	19.84	95% UCL-N	W - Test (1)
Zinc (Zn)	mg/kg	75.33	85.38	1.27E+02	--	mg/kg	85.38	95% UCL-N	W - Test (1)

For non-detects, 1/2 sample quantitation limit was used as a proxy concentration; for duplicate sample results, the average value was used in the calculation.

W - Test: Developed by Shapiro and Wilk, refer to Supplemental Guidance to RAGS: Calculating the Concentration Term, OSWER Directive 9285.7-081, May 1992.

Statistics: Maximum Detected Value (Max); 95% UCL of Normal Data (95% UCL-N); 95% UCL of Log-transformed Data (95% UCL-T); Mean of Log-transformed Data (Mean-T); Mean of Normal Data (Mean-N).

(1) Shapiro-Wilk W Test indicates data are normally distributed.

(2) Shapiro-Wilk W Test indicates data are log-normally distributed.

(3) Shapiro-Wilk W Test inconclusive; log-normal distribution assumed.

(4) 95% UCL exceeds maximum detected concentration; therefore, maximum concentration used for EPC.

(5) Shapiro-Wilk W Test inconclusive; normal distribution assumed.

TABLE 3-5
SELECTION OF EXPOSURE PATHWAYS
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenano Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Groundwater	Groundwater	All Areas	None	NA	NA	All Areas	None	Groundwater exposure unlikely; GW is considered Class II
	Soil	Soil	All Areas	POTW Worker	Adult	Inhalation	All Areas	Quan	Exposure to particulates possible
				Construction Worker	Adult	Ingestion	All Areas	Quan	Soil exposure possible during construction activities
						Dermal	All Areas	Quan	Soil exposure possible during construction activities
						Inhalation	All Areas	Quan	Soil exposure possible during construction activities
				Visitor	Adult	Ingestion	All Areas	Quan	Soil exposure possible while onsite
						Dermal	All Areas	Quan	Soil exposure possible while onsite
						Inhalation	All Areas	Quan	Soil exposure possible while onsite
				Trespasser	Adolescent	Ingestion	All Areas	Quan	Soil exposure possible while onsite
						Dermal	All Areas	Quan	Soil exposure possible while onsite
						Inhalation	All Areas	Quan	Soil exposure possible while onsite
				Resident	Adult	Inhalation	All Areas	Quan	Exposure to particulates possible
					Child	Inhalation	All Areas	Quan	Exposure to particulates possible
				Teacher/Staff	Adult	Inhalation	Off-Site	Quan	Exposure to particulates possible
				Student	Child	Inhalation	Off-Site	Quan	Exposure to particulates possible
	Surface Water	Surface Water	All Areas	Trespasser	Adolescent	Ingestion	All Areas	Quan	Contaminant uptake while wading/fishing possible
						Dermal	All Areas	Quan	Contaminant uptake while wading/fishing possible
				Resident	Child	Ingestion	All Areas	Quan	Contaminant uptake while wading/fishing possible
						Dermal	All Areas	Quan	Contaminant uptake while wading/fishing possible
	Sediment	Sediment	All Areas	Trespasser	Adolescent	Ingestion	All Areas	Quan	Contaminant uptake while wading/fishing possible
						Dermal	All Areas	Quan	Contaminant uptake while wading/fishing possible
				Resident	Child	Ingestion	All Areas	Quan	Contaminant uptake while wading/fishing possible
						Dermal	All Areas	Quan	Contaminant uptake while wading/fishing possible

TABLE 3-6

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: POTW Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Air	m^3/day	12.8	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	250	EPA, 1991	
	ED	Exposure Duration	years	25	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-7

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	480	EPA, 1998	CS x IR x CF1 x EF x ED x 1/BW x 1/AT
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	
	EF	Exposure Frequency	days/year	250	EPA, 1991	
	ED	Exposure Duration	years	1	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	365	EPA, 1989a	
Dermal	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	CDI (mg/kg-day) =
	SA	Skin Surface Area	cm^2/day	5,300	EPA, 1997a (1)	CS x SA x CF1 x AF x ABS x EF x
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	ED x 1/BW x 1/AT
	AF	Adherence Factor	mg/cm^2	1	EPA, 1996a	
	ABS-O	Absorption Factor (VOCs/SVOCs)	unitless	0 01	EPA, 1995	
	ABS-I	Absorption Factor (Inorganics)	unitless	0.001	EPA, 1995	
	EF	Exposure Frequency	days/year	250	EPA, 1991	
	ED	Exposure Duration	years	1	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	365	EPA, 1989a	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-7 (continued)

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Air	m^3/day	20	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	250	EPA, 1991	
	ED	Exposure Duration	years	1	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	365	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-8

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Visitor
Receptor Age: Adult

Exposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	60	EPA, 1998	CS x IR x CF1 x EF x ED x 1/BW x 1/AT
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	
	EF	Exposure Frequency	days/year	52	EPA, 1991	
	ED	Exposure Duration	years	10	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	
Dermal	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	CDI (mg/kg-day) =
	SA	Skin Surface Area	cm^2	3360	EPA, 1997a (1)	CS x SA x CF1 x AF x ABS x EF x
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	ED x 1/BW x 1/AT
	AF	Adherence Factor	mg/cm^2	1	EPA, 1996a	
	ABS-O	Absorption Factor (VOCs/SVOCs)	unitless	0.01	EPA, 1995	
	ABS-I	Absorption Factor (Inorganics)	unitless	0.001	EPA, 1995	
	EF	Exposure Frequency	days/year	52	EPA, 1991	
	ED	Exposure Duration	years	10	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-8 (continued)

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Visitor
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Air	m^3/day	12.8	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	52	EPA, 1991	
	ED	Exposure Duration	years	10	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-9

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Soil	mg/day	60	EPA, 1998	CS x IR x CF1 x EF x ED x 1/BW x 1/AT
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	
	EF	Exposure Frequency	days/year	10	EPA, 1991	
	ED	Exposure Duration	years	10	EPA, 1991	
	BW	Body Weight	kg	50	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	
Dermal	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	CDI (mg/kg-day) =
	SA	Skin Surface Area	cm^2	8,000	EPA, 1997a (1)	CS x SA x CF1 x AF x ABS x EF x
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	ED x 1/BW x 1/AT
	AF	Adherence Factor	mg/cm^2	1	EPA, 1996a	
	ABS-O	Absorption Factor (VOCs/SVOCs)	unitless	0 01	EPA, 1995	
	ABS-I	Absorption Factor (Inorganics)	unitless	0.001	EPA, 1995	
	EF	Exposure Frequency	days/year	10	EPA, 1991	
	ED	Exposure Duration	years	10	EPA, 1991	
	BW	Body Weight	kg	50	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-9 (continued)

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Air	m^3/day	20	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	10	EPA, 1991	
	ED	Exposure Duration	years	10	EPA, 1991	
	BW	Body Weight	kg	50	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-10

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Student
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Air	m^3/day	8	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	130	EPA, 1991	
	ED	Exposure Duration	years	5	EPA, 1991	
	BW	Body Weight	kg	30	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	1,825	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-11

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Teacher/Staff
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Air	m^3/day	8	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	260	EPA, 1991	
	ED	Exposure Duration	years	25	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-12

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Air	m^3/day	20	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	350	EPA, 1991	
	ED	Exposure Duration	years	24	EPA, 1991	
	BW	Body Weight	kg	70	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-13

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: All Areas
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CS	Chemical Concentration in Soil	mg/kg	See Table 3-2	See Table 3-2	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Inhalation Rate of Soil	m^3/day	15	EPA, 1997a	CS x IR x EF x ED x 1/BW x 1/AT x 1/PEF
	EF	Exposure Frequency	days/year	350	EPA, 1991	
	ED	Exposure Duration	years	6	EPA, 1991	
	BW	Body Weight	kg	15	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	EPA, 1989a	
	PEF	Particulate Emission Factor	m^3/kg	1.32E+09	EPA, 1996b	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-14

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: All Areas
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	mg/L	See Table 3-3	See Table 3-3	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Water	L/day	0.05	EPA, 1995	CW x IR x EF x ED x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	10	EPA, 1997a (1)	
	ED	Exposure Duration	years	10	EPA, 1997a (1)	
	BW	Body Weight	kg	50	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	
Dermal	CW	Chemical Concentration in Water	mg/L	See Table 3-3	See Table 3-3	CDI (mg/kg-day) =
	SA	Skin Surface Area	cm^2	8,000	EPA, 1997a (1)	CW x SA x CF1 x PC x ET x EF x
	CF1	Conversion Factor 1	L/cm^3	0.001	--	ED x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	See Text	(2)	
	ET	Exposure Time	hour/day	2	(1)	
	EF	Exposure Frequency	days/year	10	EPA, 1997a (1)	
	ED	Exposure Duration	years	10	EPA, 1997a (1)	
	BW	Body Weight	kg	50	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-15

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: All Areas
Receptor Population: Resident
Receptor Age: Child

Exposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	mg/L	See Table 3-3	See Table 3-3	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Water	L/day	0.05	EPA, 1995	CW x IR x EF x ED x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	52	EPA, 1997a (1)	
	ED	Exposure Duration	years	6	EPA, 1997a (1)	
	BW	Body Weight	kg	15	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	EPA, 1989a	
Dermal	CW	Chemical Concentration in Water	mg/L	See Table 3-3	See Table 3-3	CDI (mg/kg-day) =
	SA	Skin Surface Area	cm^2	4,000	EPA, 1997a (1)	CW x SA x CF1 x PC x ET x EF x
	CF1	Conversion Factor 1	L/cm^3	0.001	--	ED x 1/BW x 1/AT
	PC	Permeability Constant	cm/hr	See Text	(2)	
	ET	Exposure Time	hour/day	2	(1)	
	EF	Exposure Frequency	days/year	52	EPA, 1997a (1)	
	ED	Exposure Duration	years	6	EPA, 1997a (1)	
	BW	Body Weight	kg	15	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	EPA, 1989a	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-16

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: All Areas
Receptor Population: Trespasser
Receptor Age: Adolescent

Exposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Sediment	mg/kg	See Table 3-4	See Table 3-4	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR-S	Ingestion Rate of Sediment	mg/day	50	EPA, 1996a	CS x IR x EF x ED x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	10	EPA, 1997a (1)	
	ED	Exposure Duration	years	10	EPA, 1997a (1)	
	BW	Body Weight	kg	50	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	
Dermal	CS	Chemical Concentration in Sediment	mg/kg	See Table 3-4	See Table 3-4	CDI (mg/kg-day) =
	SA	Skin Surface Area	cm^2	1,750	EPA, 1997a (1)	CS x SA x CF1 x AF x ABS x EF x
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	ED x 1/BW x 1/AT
	AF	Adherence Factor	mg/cm^2	1	EPA, 1996a	
	ABS-O	Absorption Factor (VOCs/SVOCs)	unitless	0.01	EPA, 1995	
	ABS-I	Absorption Factor (Inorganics)	unitless	0.001	EPA, 1995	
	EF	Exposure Frequency	days/year	10	EPA, 1997a (1)	
	ED	Exposure Duration	years	10	EPA, 1997a (1)	
	BW	Body Weight	kg	50	EPA, 1997a (1)	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	EPA, 1989a	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

TABLE 3-17

VALUES USED FOR DAILY INTAKE CALCULATIONS

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: All Areas
Receptor Population: Resident
Receptor Age: Child

Exposure Rout	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Sediment	mg/kg	See Table 3-4	See Table 3-4	Chronic Daily Intake (CDI) (mg/kg-day) =
	IR	Ingestion Rate of Sediment	mg/day	50	EPA, 1996a	CS x IR x CF1 x EF x ED x 1/BW x 1/AT
	CF1	Conversion Factor 1	kg/mg	1.00E-06	--	
	EF	Exposure Frequency	days/year	52	EPA, 1991	
	ED	Exposure Duration	years	6	EPA, 1991	
	BW	Body Weight	kg	15	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	EPA, 1989a	
Dermal	CS	Chemical Concentration in Sediment	mg/kg	See Table 3-4	See Table 3-4	CDI (mg/kg-day) =
	SA	Skin Surface Area	cm^2	1,000	EPA, 1997a (1)	CS x SA x CF1 x AF x ABS x EF x
	CF1	Conversion Factor 1	kg/mg	1.00E-06	–	ED x 1/BW x 1/AT
	AF	Adherence Factor	mg/cm^2	1	EPA, 1996a	
	ABS-O	Absorption Factor (VOCs/SVOCs)	unitless	0.01	EPA, 1995	
	ABS-I	Absorption Factor (Inorganics)	unitless	0.001	EPA, 1995	
	EF	Exposure Frequency	days/year	52	EPA, 1991	
	ED	Exposure Duration	years	6	EPA, 1991	
	BW	Body Weight	kg	15	EPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	EPA, 1989a	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	EPA, 1989a	

(1) Professional Judgment

(2) Refer to Supporting Information

Sources:

EPA, 1997a: Exposure Factors Handbook

EPA, 1991: Standard Default Exposure Factors

EPA, 1989a: RAGS Part A

EPA 1996a: Supplemental Guidance to RAGS: Region 4 Bulletins

EPA 1995: Region 3 Bulletins

TABLE 3-18

CANCER TOXICITY DATA -- ORAL/DERMAL

CELOTEX SITE - WILMINGTON, ILLINOIS

Chemical of Potential Interest	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (1)	Units	Weight of Evidence/ Cancer Guideline Description	Source Target Organ	Date (2) (MM/DD/YY)
Aluminum (Al)				$(mg/kg\text{-}day)^{-1}$	D	*	
Arsenic (As)	1.5E+00	20%	7.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	07/24/01
Cadmium (Cd)	N/A	N/A	N/A	N/A	B1	IRIS	04/27/01
Copper (Cu)	N/A	N/A	N/A	N/A	D	IRIS	07/24/01
Iron (Fe)					D	*	
Lead (Pb)	N/A	N/A	N/A	N/A	B2	IRIS	07/24/01
Manganese (Mn)	N/A	N/A	N/A	N/A	D	IRIS	04/27/01
Mercuric chloride	N/A	N/A	N/A	N/A	C	IRIS	05/17/01
Nickel (Ni)	N/A	N/A	N/A	N/A		IRIS	07/24/01
Zinc (Zn)	N/A	N/A	N/A	N/A	D	IRIS	04/27/01

IRIS = Integrated Risk Information System

HEAST= Health Effects Assessment Summary Tables

* = Not included in IRIS database

(1) Provide equation for derivation in text.

(2) For IRIS values, provide the date IRIS was searched.
For HEAST values, provide the date of HEAST.
For NCEA values, provide the date of article provided by NCEA.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

E - Evidence of noncarcinogenicity

Weight of Evidence:

Known/Likely

Cannot be Determined

Not Likely

TABLE 3-19

CANCER TOXICITY DATA -- INHALATION

CELOTEX SITE - WILMINGTON, ILLINOIS

Chemical of Potential Interest	Unit Risk	Units	Adjustment (1)	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source (3)	Date (2) (MM/DD/YY)
Aluminum (Al)					$(mg/kg\text{-}day)^{-1}$	D	*	
Arsenic (As)	4.3E-03	$(ug/m^3)^{-1}$	3,500	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	07/24/01
Cadmium (Cd)	1.8E-03	$(ug/m^3)^{-1}$	3,500	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	04/27/01
Copper (Cu)	N/A	N/A	N/A	N/A	N/A	D	IRIS	05/17/01
Iron (Fe)					$(mg/kg\text{-}day)^{-1}$	D	*	
Lead (Pb)					$(mg/kg\text{-}day)^{-1}$	B2		
Manganese (Mn)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/27/01
Mercuric chloride	N/A	N/A	N/A	N/A	N/A	C	IRIS	05/17/01
Nickel (Ni)	N/A	N/A	N/A	N/A	N/A		IRIS	07/24/01
Zinc (Zn)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/27/01

IRIS = Integrated Risk Information System

HEAST= Health Effects Assessment Summary Tables

* = Not included in IRIS database

Weight of Evidence:

Known/Likely

Cannot be Determined

Not Likely

(1) Explanation of derivation provided in text

(2) For IRIS values, provide the date IRIS was searched.

For HEAST values, provide the date of HEAST.

For NCEA values, provide the date of the article provided by NCEA.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen

E - Evidence of noncarcinogenicity

(3) R = route-extrapolated

TABLE 3-20
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	POTW Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	7.81E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	1.17E-08
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	2.46E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	1.17E-08

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-21
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	3.86E-05	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	5.80E-05
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.22E-01	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	5.80E-05

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-21 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Dermal	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	4.3E-07	mg/kg-day	7.50E+00	$(mg/kg\text{-}day)^{-1}$	3.20E-06
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.3E-03	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	3.20E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-21 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.22E-09	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	1.83E-08
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	3.84E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	1.83E-08

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-22
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Visitor
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.00E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	1.51E-06
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	3.16E-03	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	1.51E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-22 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Visitor
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Dermal	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	5.6E-08	mg/kg-day	7.50E+00	$(mg/kg\text{-}day)^{-1}$	4.22E-07
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.8E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	4.22E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-22 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXiMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Visitor
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.62E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	2.44E-09
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	5.11E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	2.44E-09

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-23
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	2.70E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.06E-07
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	8.52E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	4.06E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-23 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Dermal	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	3.6E-08	mg/kg-day	7.50E+00	$(mg/kg\text{-}day)^{-1}$	2.70E-07
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.1E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	2.70E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-23 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	6.83E-11	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	1.02E-09
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	2.15E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	1.02E-09

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-24
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Student
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	5.92E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	8.88E-09
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.86E-06	mg/kg-day	–	$(mg/kg\text{-}day)^{-1}$	–
										Total Hazard Index Across All Exposure Routes/Pathways	8.88E-09

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-25
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Teacher/Staff
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	5.07E-10	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	7.61E-09
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.60E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	7.61E-09

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-26
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.71E-09	mg/kg-day	1.50E+01	$(mg/kg\text{-}day)^{-1}$	2.56E-08
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	5.38E-06	mg/kg-day	–	$(mg/kg\text{-}day)^{-1}$	–
										Total Hazard Index Across All Exposure Routes/Pathways	2.56E-08

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-27
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Inhalation	*Arsenic*	8.23E+00	*mg/kg*	8.23E+00	*mg/kg*	M	1.99E-09	*mg/kg-day*	1.50E+01	$(mg/kg\text{-}day)^{-1}$	2.99E-08
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	6.27E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	2.99E-08

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-28
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	1.43E-04	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	3.07E-07	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	2.32E-04	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	1.81E-07	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-28 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Dermal	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	4.6E-05	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	9.8E-08	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	7.4E-05	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	5.8E-08	mg/kg-day	--	$(mg/kg-day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-29
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Ingestion	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	2.48E-03	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	5.32E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	4.02E-03	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	3.13E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-29 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Dermal	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	4.0E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	8.5E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	6.4E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	5.0E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-30
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	1.75E-07	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	2.62E-07
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.37E-08	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	5.81E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	5.14E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	8.13E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	1.61E-05	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	8.77E-09	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	5.44E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	2.34E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	2.62E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-30 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Dermal	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	6.1E-09	mg/kg-day	7.50E+00	$(mg/kg\text{-}day)^{-1}$	4.59E-08
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.8E-10	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	2.0E-08	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	1.8E-05	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	2.8E-08	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	5.6E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	3.1E-10	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	1.9E-08	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	8.2E-08	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	4.59E-08

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-31
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Ingestion	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	3.03E-06	mg/kg-day	1.50E+00	$(mg/kg\text{-}day)^{-1}$	4.54E-06
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.37E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	1.01E-05	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	8.90E-03	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	1.41E-05	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	2.79E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	1.52E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	9.42E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	4.05E-05	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	4.54E-06

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-31 (cont'd)
CALCULATION OF CANCER RISKS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Cancer)	Intake (Cancer) Units	Cancer Slope Factor (2)	Cancer Slope Factor Units	Cancer Risk
Dermal	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	6.1E-08	mg/kg-day	7.50E+00	$(mg/kg\text{-}day)^{-1}$	4.54E-07
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.7E-09	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	2.0E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	1.8E-04	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	2.8E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	5.6E-06	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	3.0E-09	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	1.9E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	8.1E-07	mg/kg-day	--	$(mg/kg\text{-}day)^{-1}$	--
										Total Hazard Index Across All Exposure Routes/Pathways	4.54E-07

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, no cancer slope factor.

TABLE 3-32

NON-CANCER TOXICITY DATA -- ORAL/DERMAL

CELOTEX SITE - WILMINGTON, ILLINOIS

Chemical of Potential Interest	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (3) (MM/DD/YY)
Aluminum (Al)	Chronic	1.00E+00	mg/kg-day	20%	2.0E-01	mg/kg-day			NCEA	12/06/01
Arsenic (As)	Chronic	3.00E-04	mg/kg-day	20%	6.00E-05	mg/kg-day	Skin	3	IRIS	07/24/01
Cadmium (Cd)	Chronic	5.00E-04	mg/kg-day	20%	1.00E-04	mg/kg-day	Kidney	10	IRIS	04/27/01
Copper (Cu)	Chronic	3.71E-02	mg/kg-day	20%	7.42E-03	mg/kg-day			NCEA	12/06/01
Iron (Fe)	Chronic	3.00E-01	mg/kg-day	20%	6.00E-02	mg/kg-day			NCEA	12/06/01
Lead (Pb)	Chronic	N/A	N/A	N/A	N/A	N/A			IRIS	07/24/01
Manganese (Mn)	Chronic	1.40E-02	mg/kg-day	20%	2.80E-03	mg/kg-day	CNS	3	IRIS	04/27/01
Mercuric chloride	Chronic	3.00E-04	mg/kg-day	20%	6.00E-05	mg/kg-day	Immune	1000	IRIS	05/17/01
Nickel (Ni)	Chronic	2.00E-02	mg/kg-day	20%	4.00E-03	mg/kg-day	*Organ Wts*	300	IRIS	07/24/01
Zinc (Zn)	Chronic	3.00E-01	mg/kg-day	20%	6.00E-02	mg/kg-day	Blood	3	IRIS	04/27/01

N/A = Not Applicable

PNS = Peripheral Nervous System

CNS = Central Nervous System

CVS = Cardiovascular System

(1) Refer to RAGS, Part A

(2) Provide equation used for derivation.

(3) For IRIS values, provide the date IRIS was searched.

For HEAST values, provide the date of HEAST.

For NCEA values, provide the date of the article provided by NCEA.

TABLE 3-33

NON-CANCER TOXICITY DATA -- INHALATION

CELOTEX SITE - WILMINGTON, ILLINOIS

Chemical of Potential Interest	Chronic/ Subchronic	Value Inhalation RfC	Units	Adjusted Inhalation RfD (1)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfC:RfD: Target Organ (3)	Dates (2) (MM/DD/YY)
Aluminum (Al)				1.4E-03	mg/kg-day			NCEA	12/06/01
Arsenic (As)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	07/24/01
Cadmium (Cd)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	04/27/01
Copper (Cu)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	07/24/01
Iron (Fe)	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Lead (Pb)									
Manganese (Mn)	Chronic	5.0E-05	mg/m^3	1.4E-05	mg/kg-day	CNS	1000	IRIS	04/27/01
Mercuric chloride	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	05/17/01
Nickel (Ni)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	07/24/01
Zinc (Zn)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	04/27/01

N/A = Not Applicable

PNS = Peripheral Nervous System

CNS = Central Nervous System

CVS = Cardiovascular System

(1) Provide equation used for derivation in text.

(2) For IRIS values, provide the date IRIS was searched.

For HEAST values, provide the date of HEAST.

For NCEA values, provide the date of the article provided by NCEA.

(3) R = route-extrapolated

TABLE 3-34
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	POTW Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	7.81E-10	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	2.46E-06	mg/kg-day	--	mg/kg-day			--
										Total Hazard Index Across All Exposure Routes/Pathways			0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-35
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	3.86E-05	mg/kg-day	3.00E-04	mg/kg-day			1.29E-01
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.22E-01	mg/kg-day	3.0E-01	mg/kg-day			4.06E-01
												Total Hazard Index Across All Exposure Routes/Pathways	5.34E-01

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-35 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	4.3E-07	mg/kg-day	6.0E-05	mg/kg-day			7.11E-03
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.3E-03	mg/kg-day	6.0E-02	mg/kg-day			2.24E-02
												Total Hazard Index Across All Exposure Routes/Pathways	2.95E-02

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-35 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Construction Worker
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.22E-09	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	3.84E-06	mg/kg-day	--	mg/kg-day			--
										Total Hazard Index Across All Exposure Routes/Pathways			0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-36
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Visitor
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.00E-06	mg/kg-day	3.00E-04	mg/kg-day			3.35E-03
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	3.16E-03	mg/kg-day	3.0E-01	mg/kg-day			1.05E-02
												Total Hazard Index Across All Exposure Routes/Pathways	1.39E-02

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-36 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Visitor
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	5.6E-08	mg/kg-day	6.0E-05	mg/kg-day			9.38E-04
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.8E-04	mg/kg-day	6.0E-02	mg/kg-day			2.95E-03
												Total Hazard Index Across All Exposure Routes/Pathways	3.89E-03

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-36 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Visitor
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.62E-10	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	5.11E-07	mg/kg-day	--	mg/kg-day			--
										Total Hazard Index Across All Exposure Routes/Pathways			0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-37
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	2.70E-07	mg/kg-day	3.00E-04	mg/kg-day			9.01E-04
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	8.52E-04	mg/kg-day	3.0E-01	mg/kg-day			2.84E-03
												Total Hazard Index Across All Exposure Routes/Pathways	3.74E-03

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-37 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	3.6E-08	mg/kg-day	6.0E-05	mg/kg-day			6.01E-04
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.1E-04	mg/kg-day	6.0E-02	mg/kg-day			1.89E-03
												Total Hazard Index Across All Exposure Routes/Pathways	2.49E-03

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-37 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	6.83E-11	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	2.15E-07	mg/kg-day	--	mg/kg-day			--
										Total Hazard Index Across All Exposure Routes/Pathways			0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-38
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Student
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	5.92E-10	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.86E-06	mg/kg-day	--	mg/kg-day			H/J
										Total Hazard Index Across All Exposure Routes/Pathways			0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-39
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Teacher/Staff
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	5.07E-10	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	1.60E-06	mg/kg-day	--	mg/kg-day			H/J
												Total Hazard Index Across All Exposure Routes/Pathways	0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-40
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Adult

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.71E-09	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	5.38E-06	mg/kg-day	--	mg/kg-day			H/J
										Total Hazard Index Across All Exposure Routes/Pathways			0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-41
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Soil
Exposure Medium:	Soil
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Inhalation	Arsenic	8.23E+00	mg/kg	8.23E+00	mg/kg	M	1.99E-09	mg/kg-day	--	mg/kg-day			--
	Iron	2.59E+04	mg/kg	2.59E+04	mg/kg	M	6.27E-06	mg/kg-day	--	mg/kg-day			H/J
										Total Hazard Index Across All Exposure Routes/Pathways			0.00E+00

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-42
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	1.43E-04	mg/kg-day	1.0E+00	mg/kg-day			1.43E-04
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	3.07E-07	mg/kg-day	3.7E-02	mg/kg-day			8.27E-06
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	2.32E-04	mg/kg-day	3.0E-01	mg/kg-day			7.74E-04
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	1.81E-07	mg/kg-day	--	mg/kg-day			--
									Total Hazard Index Across All Exposure Routes/Pathways				9.25E-04

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-42 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	4.6E-05	mg/kg-day	2.0E-01	mg/kg-day			2.29E-04
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	9.8E-08	mg/kg-day	7.4E-03	mg/kg-day			1.32E-05
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	7.4E-05	mg/kg-day	6.0E-02	mg/kg-day			1.24E-03
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	5.8E-08	mg/kg-day	--	mg/kg-day			--
										Total Hazard Index Across All Exposure Routes/Pathways			1.48E-03

(1) *Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.*

(2) *If cell blank, value not available.*

TABLE 3-43
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	2.48E-03	mg/kg-day	1.0E+00	mg/kg-day			2.48E-03
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	5.32E-06	mg/kg-day	3.7E-02	mg/kg-day			1.43E-04
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	4.02E-03	mg/kg-day	3.0E-01	mg/kg-day			1.34E-02
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	3.13E-06	mg/kg-day	--	mg/kg-day			--
									Total Hazard Index Across All Exposure Routes/Pathways				1.60E-02

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-43 (cont'd)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Surface Water
Exposure Medium:	Surface Water
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Aluminum (Al)	5.23E+03	µg/L	5.23E+03	µg/L	M	4.0E-04	mg/kg-day	2.0E-01	mg/kg-day			1.99E-03
	Copper (Cu)	1.12E+01	µg/L	1.12E+01	µg/L	M	8.5E-07	mg/kg-day	7.4E-03	mg/kg-day			1.15E-04
	Iron (Fe)	8.47E+03	µg/L	8.47E+03	µg/L	M	6.4E-04	mg/kg-day	6.0E-02	mg/kg-day			1.07E-02
	Lead (Pb)	6.60E+00	µg/L	6.60E+00	µg/L	M	5.0E-07	mg/kg-day	--	mg/kg-day			--
										Total Hazard Index Across All Exposure Routes/Pathways			1.28E-02

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-44
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	1.75E-07	mg/kg-day	3.00E-04	mg/kg-day			5.83E-04
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	1.37E-08	mg/kg-day	5.00E-04	mg/kg-day			2.74E-05
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	5.81E-07	mg/kg-day	--	mg/kg-day			--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	5.14E-04	mg/kg-day	3.0E-01	mg/kg-day			1.71E-03
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	8.13E-07	mg/kg-day	--	mg/kg-day			--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	1.61E-05	mg/kg-day	1.4E-02	mg/kg-day			1.15E-03
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	8.77E-09	mg/kg-day	3.0E-04	mg/kg-day			2.92E-05
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	5.44E-07	mg/kg-day	2.0E-02	mg/kg-day			2.72E-05
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	2.34E-06	mg/kg-day	3.0E-01	mg/kg-day			7.80E-06
										Total Hazard Index Across All Exposure Routes/Pathways			3.54E-03

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-44 (continued)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	6.1E-09	mg/kg-day	6.0E-05	mg/kg-day			1.02E-04
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.8E-10	mg/kg-day	1.0E-04	mg/kg-day			4.79E-06
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	2.0E-08	mg/kg-day	--	mg/kg-day			--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	1.8E-05	mg/kg-day	6.0E-02	mg/kg-day			3.00E-04
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	2.8E-08	mg/kg-day	--	mg/kg-day			--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	5.6E-07	mg/kg-day	2.8E-03	mg/kg-day			2.01E-04
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	3.1E-10	mg/kg-day	6.0E-05	mg/kg-day			5.11E-06
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	1.9E-08	mg/kg-day	4.0E-03	mg/kg-day			4.76E-06
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	8.2E-08	mg/kg-day	6.0E-02	mg/kg-day			1.36E-06
												Total Hazard Index Across All Exposure Routes/Pathways	6.19E-04

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-45
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Ingestion	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	3.03E-06	mg/kg-day	3.00E-04	mg/kg-day			1.01E-02
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	2.37E-07	mg/kg-day	5.00E-04	mg/kg-day			4.75E-04
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	1.01E-05	mg/kg-day	--	mg/kg-day			--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	8.90E-03	mg/kg-day	3.0E-01	mg/kg-day			2.97E-02
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	1.41E-05	mg/kg-day	--	mg/kg-day			--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	2.79E-04	mg/kg-day	1.4E-02	mg/kg-day			1.99E-02
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	1.52E-07	mg/kg-day	3.0E-04	mg/kg-day			5.07E-04
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	9.42E-06	mg/kg-day	2.0E-02	mg/kg-day			4.71E-04
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	4.05E-05	mg/kg-day	3.0E-01	mg/kg-day			1.35E-04
										Total Hazard Index Across All Exposure Routes/Pathways			6.13E-02

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-45 (continued)
CALCULATION OF NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Medium:	Sediment
Exposure Medium:	Sediment
Exposure Point:	All Areas
Receptor Population:	Resident
Receptor Age:	Child

Exposure Route	Chemical of Potential Interest	Medium EPC Value	Medium EPC Units	Route EPC Value	Route EPC Units	EPC Selected for Hazard Calculation (1)	Intake (Non-Cancer)	Intake (Non-Cancer) Units	Reference Dose (2)	Reference Dose Units	Reference Concentration	Reference Concentration Units	Hazard Quotient
Dermal	Arsenic (As)	6.38E+00	mg/kg	6.38E+00	mg/kg	M	6.1E-08	mg/kg-day	6.0E-05	mg/kg-day			1.01E-03
	Cadmium (Cd)	5.00E-01	mg/kg	5.00E-01	mg/kg	M	4.7E-09	mg/kg-day	1.0E-04	mg/kg-day			4.75E-05
	Copper (Cu)	2.12E+01	mg/kg	2.12E+01	mg/kg	M	2.0E-07	mg/kg-day	--	mg/kg-day			--
	Iron (Fe)	1.87E+04	mg/kg	1.87E+04	mg/kg	M	1.8E-04	mg/kg-day	6.0E-02	mg/kg-day			2.97E-03
	Lead (Pb)	2.97E+01	mg/kg	2.97E+01	mg/kg	M	2.8E-07	mg/kg-day	--	mg/kg-day			--
	Manganese (Mn)	5.87E+02	mg/kg	5.87E+02	mg/kg	M	5.6E-06	mg/kg-day	2.8E-03	mg/kg-day			1.99E-03
	Mercury chloride	3.20E-01	mg/kg	3.20E-01	mg/kg	M	3.0E-09	mg/kg-day	6.0E-05	mg/kg-day			5.07E-05
	Nickel (Ni)	1.98E+01	mg/kg	1.98E+01	mg/kg	M	1.9E-07	mg/kg-day	4.0E-03	mg/kg-day			4.71E-05
	Zinc (Zn)	8.54E+01	mg/kg	8.54E+01	mg/kg	M	8.1E-07	mg/kg-day	6.0E-02	mg/kg-day			1.35E-05
												Total Hazard Index Across All Exposure Routes/Pathways	6.13E-03

(1) Specify Medium-Specific (M) or Route-Specific (R) EPC selected for hazard calculation.

(2) If cell blank, value not available.

TABLE 3-46

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Receptor Population:	POTW Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas	Arsenic (As)	--	2E-08	--	1.73E-08	Arsenic (As)	--	--	--	--	--
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	--	--	--	--
			(Total)	0.00E+00	1.73E-08	0.00E+00	1.73E-08	(Total)		0.00E+00	0.00E+00	0.00E+00	0.00E+00
							Total Risk Across Soil	1.73E-08					Total Hazard Index Across All Media and All Exposure Routes	0.00E+00
							Total Risk Across All Media and All Exposure Routes	1.73E-08						

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

TABLE 3-47

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Receptor Population:	Construction Worker
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas	Arsenic (As)	5.80E-05	1.83E-08	3.20E-06	6.12E-05	Arsenic (As)	--	1.29E-01	--	7.11E-03	1.36E-01
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	4.06E-01	--	2.24E-02	4.28E-01
			(Total)	5.80E-05	1.83E-08	3.20E-06	6.12E-05	(Total)		5.35E-01	0.00E+00	2.95E-02	5.65E-01
							Total Risk Across Soil	6.12E-05					Total Hazard Index Across All Media and All Exposure Routes	5.65E-01
							Total Risk Across All Media and All Exposure Routes	6.12E-05						

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

TABLE 3-48

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Receptor Population:	Visitor
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas	Arsenic (As)	1.51E-06	2.44E-09	4.22E-07	1.93E-06	Arsenic (As)	--	3.35E-03	--	9.38E-04	4.29E-03
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	1.05E-02	--	2.95E-03	1.35E-02
			(Total)	1.51E-06	2.44E-09	4.22E-07	1.93E-06	(Total)		1.39E-02	0.00E+00	3.89E-03	1.77E-02
							Total Risk Across Soil	1.93E-06					Total Hazard Index Across All Media and All Exposure Routes	1.77E-02
							Total Risk Across All Media and All Exposure Routes	1.93E-06						

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

TABLE 3-49

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas	Arsenic (As)	4.06E-07	1.02E-09	2.70E-07	6.77E-07	Arsenic (As)	--	9.01E-04	--	6.01E-04	1.50E-03
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	2.84E-03	--	1.89E-03	4.73E-03
			(Total)	4.06E-07	1.02E-09	2.70E-07	6.77E-07	(Total)		3.74E-03	0.00E+00	2.49E-03	6.23E-03
Surface Water	Surface Water	All Areas	Aluminum (Al)	--		--	--	Aluminum (Al)	--	1.43E-04		2.29E-04	3.72E-04
			Copper (Cu)	--		--	--	Copper (Cu)	--	8.27E-06		1.32E-05	2.15E-05
			Iron (Fe)	--		--	--	Iron (Fe)	--	7.74E-04		1.24E-03	2.01E-03
			Lead (Pb)	--		--	--	Lead (Pb)	--	--		--	--
			(Total)	0.00E+00		0.00E+00	0.00E+00	(Total)		9.25E-04		1.48E-03	2.41E-03
Sediment	Sediment	All Areas	Arsenic (As)	2.62E-07		4.59E-08	3.08E-07	Arsenic (As)	--	5.83E-04		1.02E-04	6.85E-04
			Cadmium (Cd)	--		--	--	Cadmium (Cd)	--	2.74E-05		4.79E-06	3.22E-05
			Copper (Cu)	--		--	--	Copper (Cu)	--	--		--	--
			Iron (Fe)	--		--	--	Iron (Fe)	--	1.71E-03		3.00E-04	2.01E-03
			Lead (Pb)	--		--	--	Lead (Pb)	--	--		--	--
			Manganese (Mn)	--		--	--	Manganese (Mn)	--	1.15E-03		2.01E-04	1.35E-03
			Mercury chloride	--		--	--	Mercury chloride	--	2.92E-05		5.11E-06	3.43E-05
			Nickel (Ni)	--		--	--	Nickel (Ni)	--	2.72E-05		4.76E-06	3.20E-05
			Zinc (Zn)	--		--	--	Zinc (Zn)	--	7.80E-06		1.36E-06	9.16E-06
			(Total)	2.62E-07		4.59E-08	3.08E-07	(Total)		3.53E-03		6.19E-04	4.15E-03
												Total Hazard Index Across All Media and All Exposure Routes	1.28E-02
							Total Risk Across All Media and All Exposure Routes	9.85E-07					

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

1/8/02

TABLE 3-50

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	Current/Future
Receptor Population:	Student
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas	Arsenic (As)	--	8.88E-09	--	8.88E-09	Arsenic (As)	--	--	--	--	--
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	--	--	--	--
			(Total)	0.00E+00	8.88E-09	0.00E+00	8.88E-09	(Total)		0.00E+00	0.00E+00	0.00E+00	0.00E+00
							Total Risk Across Soil						Total Hazard Index Across All Media and All Exposure Routes
							8.88E-09						0.00E+00
							Total Risk Across All Media and All Exposure Routes						
							8.88E-09						

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

TABLE 3-51

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	*Current/Future*
Receptor Population:	Teacher/Staff
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas	Arsenic (As)	--	7.61E-09	--	7.61E-09	Arsenic (As)	--	--	--	--	--
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	--	--	--	--
			(Total)	0.00E+00	7.61E-09	0.00E+00	7.61E-09	(Total)		0.00E+00	0.00E+00	0.00E+00	0.00E+00
							Total Risk Across Soil: 7.61E-09						Total Hazard Index Across All Media and All Exposure Routes: 0.00E+00
							Total Risk Across All Media and All Exposure Routes: 7.61E-09						

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

TABLE 3-52

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	*Current/Future*
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas											
			Arsenic (As)	--	2.56E-08	--	2.56E-08	Arsenic (As)	--	--	--	--	--
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	--	--	--	--
			(Total)	0.00E+00	2.56E-08	0.00E+00	2.56E-08	*(Total)*		0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total Hazard Index Across All Media and All Exposure Routes: 0.00E+00

Total Risk Across All Media and All Exposure Routes: 2.56E-08

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

TABLE 3-53

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPIs

REASONABLE MAXIMUM EXPOSURE

CELOTEX SITE - WILMINGTON, ILLINOIS

Scenario Timeframe:	*Current/Future*
Receptor Population:	Resident
Receptor Age:	Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Soil	All Areas											
			Arsenic (As)	--	2.99E-08	--	2.99E-08	Arsenic (As)	--	--	--	--	--
			Iron (Fe)	--	--	--	--	Iron (Fe)	--	--	--	--	--
			(Total)	0.00E+00	2.99E-08	0.00E+00	2.99E-08	(Total)		0.00E+00	0.00E+00	0.00E+00	0.00E+00
Surface Water	Surface Water	All Areas											
			Aluminum (Al)	--		--	--	Aluminum (Al)	--	2.48E-03		1.99E-03	4.47E-03
			Copper (Cu)	--		--	--	Copper (Cu)	--	1.43E-04		1.15E-04	2.58E-04
			Iron (Fe)	--		--	--	Iron (Fe)	--	1.34E-02		1.07E-02	2.41E-02
			Lead (Pb)	--		--	--	Lead (Pb)	--	--		--	--
			(Total)	0.00E+00		0.00E+00	0.00E+00	(Total)		1.60E-02		1.28E-02	2.88E-02
Sediment	Sediment	All Areas											
			Arsenic (As)	4.54E-06		4.54E-07	4.99E-06	Arsenic (As)	--	1.01E-02		1.01E-03	1.11E-02
			Cadmium (Cd)	--		--	--	Cadmium (Cd)	--	4.75E-04		4.75E-05	5.23E-04
			Copper (Cu)	--		--	--	Copper (Cu)	--	--		--	--
			Iron (Fe)	--		--	--	Iron (Fe)	--	2.97E-02		2.97E-03	3.27E-02
			Lead (Pb)	--		--	--	Lead (Pb)	--	--		--	--
			Manganese (Mn)	--		--	--	Manganese (Mn)	--	1.99E-02		1.99E-03	2.19E-02
			Mercury chloride	--		--	--	Mercury chloride	--	5.07E-04		5.07E-05	5.58E-04
			Nickel (Ni)	--		--	--	Nickel (Ni)	--	4.71E-04		4.71E-05	5.18E-04
			Zinc (Zn)	--		--	--	Zinc (Zn)	--	1.35E-04		1.35E-04	2.70E-04
			(Total)	4.54E-06		4.54E-07	4.99E-06	(Total)		6.13E-02		6.25E-03	6.75E-02

Total Risk Across All Media and All Exposure Routes: 5.02E-06

Total Hazard Index Across All Media and All Exposure Routes: 9.64E-02

Total Skin HI =	
Total Blood HI =	
Total Liver HI =	
Total Kidney HI =	
Total CNS HI =	
Total Respiratory Tract HI =	

1/8/02

Table 4-1

Comparison of Surface Water Screening Values to Detected Inorganic Constituents in Surface Water
Celotex Facility - Wilmington, Illinois

Sample Designation ==>>		SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-6D	SW-7	SW-8
Date Sampled ==>>		2/9/01	2/9/01	2/8/901	2/9/01	2/8/01	2/8/01	2/8/01	2/8/01	2/9/01
Analyte	**SWSV**									
Inorganics (ug/l)										
Aluminum	NE	3710 J	4930 J	262 J	5230 J	396 J	504 J	518 J	642 J	1500J
Barium	3.9	**69.4**	**65.0**	**43.6**	**67.8**	**46.5**	**41.7**	**40.2**	**42.0**	**44.4**
Beryllium	5.1	0.46 J	0.18 J	0.10 U	0.53 J	0.10 U	0.20 J	0.10 U	0.10 U	0.26 J
Cadmium	1.0 (h)	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
Calcium	NE	60800	35800	82500	40100	86600	79500	77300	78400	55900
Chromium	180 (h)	5.40	6.8	1.0	6.8	1.2	1.1	1.1	1.3	2.6
Cobalt	3.0	2.4	**3.2**	0.70 U	**3.2**	0.70 U	0.70 U	0.70 U	0.75	0.70 U
Copper	11 (h)	9.0	**11.2**	1.9 J	10.8	2.4 J	1.6 J	2.2 J	2.7 J	4.3 J
Iron	1000	***6670 J***	***8380 J***	553 J	***8470 J***	827 J	774 J	801 J	994 J	***2340 J***
Lead	2.5 (h)	**5.7**	**6.2**	1.7 U	**6.6**	1.7 U	1.7 U	1.7	1.7 U	**3.0**
Magnesium	NE	21300	15800	31100	17700	34000	33800	33000	34300	21500
Manganese	80	**324**	**228**	50.0	**239**	58.4	31.3	29.1	32.9	**103**
Nickel	160 (h)	8.6	10.6	2.2	10.4	2.7	2.4	2.2	1.9	3.6
Potassium	NE	4720 J	5120 J	2540 J	4730 J	2170 J	1820 J	1730 J	1760 J	3250 J
Silver	0.12*	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Sodium	NE	12900	6740	20300	7590	17900	15900	15600	15500	14400
Vanadium	19	7.9	10.7	0.84	11.1	0.78	0.97	1.2	2.0	2.9
Zinc	100 (h)	27.8	29.5	2.8 J	30.6	1.4 J	1.1 UJ	1.1 UJ	4.1 J	11.8 J
Cyanide	5.2	0.72 J	1.3 J	1.1 J	1.3 J	1.4 J	1.1 J	1.0 J	0.60 U	1.7 J

Notes:

SWSV = Surface Water Screening Value. These values are Ecotox Thresholds listed in U.S. EPA's 1996 ECO Update (Intermittent Bulletin Vol. 3, Number 2) or, for constituents not having Ecotox Thresholds, SWSVs are U.S. EPA Ambient Water Quality Criteria (AQWC)
Concentrations exceeding SWSVs are in **BOLD**
(h) = SWSV is based on a hardness of 100 mg/l as calcium carbonate
* Ambient Water Quality Criteria
NE = Not Established
J = Estimated value
U = Constituent analyzed for but not detected; value reported is the sample quantitation limit
D = Duplicate

Table 4-2

Comparison of Sediment Screening Values to Detected Inorganic Constituents in Sediment
Celotex Facility - Wilmington, Illinois

Sample Designations ==>>		X201	X202	X203	X204	X205	X206	X207	X208	X209	X210
Date Sampled ==>>		6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95	6/15/95
	SSV										
Inorganics (mg/kg)											
Aluminum	NE	4130	7650	14700	8280	15600	14600	11500	10500	5760	6400
Antimony	NE	0.35 U	0.68 U	0.61 U	0.55 U	0.55 U	0.45 U	0.56 U	0.42 U	0.45 U	0.44 U
Arsenic	8.2	3.9	7.5	6.5	6.5	8.4	8.3	6.6	5.8	4.3	2.6
Barium	NE	27.3 B	67.6 B	110	82	121	111	193	100	54.6	39.3 B
Beryllium	NE	0.32 B	0.52 B	0.89 B	0.56 B	0.95 B	0.88 B	0.68 B	0.63 U	0.4 B	0.40 B
Cadmium	1.2	0.20 B	0.49 B	0.72 B	0.46 B	0.75 B	0.76 B	0.55 B	0.70 B	0.39 B	0.31 B
Calcium	NE	19400	27700	15400	13700	9960	9820	10900	43400	15700	17600
Chromium	81	6.6	11.9	21.7	13.3	20.9	19.6	16.4	14.9	8.4	8.7
Cobalt	NE	3.1 B	6.3 B	7.9 B	6.3 B	8.8 B	8.3 B	9.0 B	9.1 B	4.0 B	2.4 B
Copper	34	5.2	17.4	27.7	16.8	19.8	19.0	19.3	12.0	11.2	10.7
Iron	20000*	8740	15300	**20800**	14300	**27700**	**22000**	14300	**21100**	8500	7180
Lead	47	12.3	17.8	25.4	21.1	24.9	23.6	16.7	10.6	17.6	14.7
Magnesium	NE	10300	9450	8450	8460	6490	6390	5490	15200	6020	6010
Manganese	460*	73.2	**597**	157	150	**549**	**579**	192	**1310**	93.9	81.3
Mercury	0.15	0.12 U	0.18 U	0.19 U	0.14 U	0.14 U	0.15 U	0.15 U	0.12 U	0.12 U	0.2 U
Nickel	21	7.0 B	15	**24**	19	**23**	**22**	**29.3**	18	10.3	7.8 B
Potassium	NE	758 B	1500 B	2200	1490	2130	2030	2300	2110	1040 B	1210
Selenium	NE	0.53 U	1.0 U	0.92 U	0.83 U	0.83 U	0.67 U	0.83 U	0.63 U	0.67 U	0.66 U
Silver	NE	0.18 U	0.34 U	0.31 U	0.28 U	0.28 U	0.22 U	0.28 U	0.21 U	0.22 U	0.22 U
Sodium	NE	40.8 U	78.1 U	145 B	63.6 U	64.9 B	51.6 U	120 B	70.5 B	51.6 U	50.8 U
Thallium	NE	0.53 U	1.1 B	0.92 U	0.83 U	0.96 B	0.74 B	0.83 U	0.63 U	0.67 U	0.66 U
Vanadium	NE	10	15.4 B	27.5	17.2	27.4	26.5	20.1	20.1	13.4	11.1
Zinc	150	31.5	66.9	101	69.7	101	96.0	88.1	65.4	50.3	40.7
Cyanide	NE	0.49 U	0.85 U	0.91 U	0.44 U	0.71 U	0.67 U	0.54 U	0.52 U	0.51 U	0.65 U

Notes:
SSV = Sediment Screening Value. These values are Ecotox Thresholds listed in U.S. EPA's 1996 ECO Update (Intermittent Bulletin Vol. 3, Number 2) or, for constituents not having Ecotox Thresholds, SSVs are Ontario Ministry of Environment Lowest Effect Levels
Concentrations exceeding SSVs are in **BOLD**
*= Ontario Ministry of Environment Lowest Effect Level
NE = Not Established
J = Estimated value
U = Constituent analyzed for but not detected; value reported is the sample quantitation limit
B = Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.
(a) SED-6D is a duplicate of SED-6

Table 4-2

Comparison of Sediment Screening Values to Detected Inorganic Constituents in Sediment
Celotex Facility - Wilmington, Illinois

Sample Designations ==>>		SED-1	SED-2	SED-3	SED-4	SED-5	SED-6	SED-6D (a)	SED-7	SED-8	SED-9
Date Sampled ==>>		2/9/01	2/9/01	2/8/01	2/9/01	2/8/01	2/8/01	2/8/01	2/8/01	2/9/01	2/10/01
	SSV										
Inorganics (mg/kg)											
Aluminum	NE	10500	11400	6760	6910	6090	7010	6630	10900	8720	5400
Antimony	NE	0.74 UJ	0.86 UJ	0.67 J	0.65 UJ	0.60 UJ	0.69 J	0.63 UJ	0.64 UJ	0.71 UJ	0.61 UJ
Arsenic	8.2	8.4	5.8	5.1	4.4	4.0	4.7	4.5	6.1	4.3	5.6
Barium	NE	105	108	79.2	64.9	72.3	79.8	69.3	106.0	84.6	56.2
Beryllium	NE	0.76	0.83	0.47 J	0.56	0.48 J	0.55	0.54	0.72	0.63	0.38 J
Cadmium	1.2	0.2	0.21 U	0.83	0.18	0.14 U	0.18	0.15 U	0.31	0.17 U	0.15 U
Calcium	NE	26100	13000	29500	199900	19000	14600	13600	13400	16100	86600
Chromium	81	17.5	18.7	11.3	11.4	11.6	12.3	11.6	23.6	14.1	8.5
Cobalt	NE	8.1	7.5	5.9	5.1	5.2	5.4	4.9	6.7	7.4	4.8
Copper	34	24.6	25.6	17	13.5	18.4	24.5	22.3	**38.3**	15.6	10.6
Iron	20000*	**21800**	**21000**	15100	15400	13500	14800	13400	**20400**	19600	15100
Lead	47	32	44.4	33.1	23.0	37	**55.3**	46.5	40.1	15.6	15.6
Magnesium	NE	11500	7230	9820	7980	8610	6430	6390	7250	9400	14500
Manganese	460*	**778**	**595**	**552**	253	378.0	**474**	383	393	**904**	**660**
Mercury	0.15	0.13 J	**0.17 J**	**0.19 J**	0.13 J	**0.66 J**	**2.0 J**	**0.44 J**	**0.61 J**	0.12 J	0.090 J
Nickel	21	19.8	20.9	13.3	13.6	11.8	14.2	13.3	18.9	16.3	10.6
Potassium	NE	1420 J	1290 J	853 J	774 J	869 J	854 J	807 J	1360 J	1250 J	1050 J
Selenium	NE	1.5	1.8	1.4	1.3	1.2 U	1.2 U	1.2 U	1.3	1.5	1.2 U
Silver	NE	0.15 J	0.17 U	0.13 U	0.13 U	0.12 U	0.13 U	0.13 U	0.13 U	0.14 U	0.12 U
Sodium	NE	299 J	364	404 J	273 J	261 J	279 J	268 J	322 J	244 J	309 J
Thallium	NE	1.8 U	2.1 U	1.7 U	1.6 U	1.5 U	1.6 U	1.6 U	1.6 U	1.8 U	1.5 U
Vanadium	NE	22.7	25	15.3	16.7	13.9	15.7	14.6	23.0	18.3	13.2
Zinc	150	86.6	99.4	127	60.7	61.8	80.7	74.7	102	60.5	44.9
Cyanide	NE	0.12 J	0.10 J	0.11 J	0.040 UJ	0.090 J	0.070 J	0.040 J	0.080 J	0.16 J	0.040 UJ

Notes:

SSV = Sediment Screening Value. These values are Ecotox Thresholds listed in U.S. EPA's 1996 ECO Update (Intermittent Bulletin Vol. 3, Number 2) or, for constituents not having Ecotox Thresholds, SSVs are Ontario Ministry of Environment Lowest Effect Levels

Concentrations exceeding SSVs are in **BOLD**

*= Ontario Ministry of Environment Lowest Effect Level

NE = Not Established

J = Estimated value

U = Constituent analyzed for but not detected; value reported is the sample quantitation limit

B = Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

(a) SED-6D is a duplicate of SED-6

Table 4-3

Summary of Sediment and Surface Water Constituents of Potential Interest
Celotex Facility - Wilmington, Illinois

	RME Sediment (mg/kg)	Screening Level (mg/kg)		EEQ	RME Surface Water (mg/l)	Screening Level (mg/l)		EEQ
Arsenic	6.4	8.21	(a)	0.75	-	-	-	-
Cobalt	-	-	-	-	2.23	3	(a)	0.74
Copper	21.2	34	(a)	0.62	8.27	11	(a)	0.75
Iron	18,745	20000*	(b)	0.94	6020	1000	(a)	6.02
Lead	29.7	47	(a)	0.63	5.03	2.5	(a)	2.0
Mercury	0.32(c)	0.15	(a)	2.10	-	-	-	-
Nickel	19.84	21	(a)	0.94	-	-	-	-

Notes:
(a) Ecotox Threshold (U.S. EPA 1996)
(b) Ontario Ministry of Environment
(c) All mercury detections in 2001 were estimated concentrations; mercury data are suspect
Sediment RME values are based on 1995 and 2001 sediment data; surface water RME values are based on 2001 data.